LAWRENCE LIVERMORE NATIONAL LABORATORY

INTEGRATED SAFETY MANAGEMENT SYSTEM DESCRIPTION

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Work performed under the auspices of the U.S. Department of Energy by the University of California, Lawrence Livermore National Laboratory under Contract W-7405-ENG-48.

Integrated Safety Management provides important opportunities and advantages for the Lawrence Livermore National Laboratory and the Department of Energy in the consistent and proper attention to safety essential in the conduct of the Laboratory's missions. This document describes a forward-looking and comprehensive institutional approach and set of requirements for operations and activities and for the implementation of the Integrated Safety Management System. A high level of attention to safety and performance is of prime importance to the success of the Laboratory and the Department of Energy.

Approval:

C. Bruce Tarter, Director
Lawrence Livermore National Laboratory

2/14/00

Date

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NOTICE

This LLNL Integrated Safety Management System (ISMS) Description is available on the LLNL website at the following address:

http://www.llnl.gov/es_and_h/ism/ism-description.pdf

EXECUTIVE SUMMARY

Introduction

The Lawrence Livermore National Laboratory (LLNL) is taking a comprehensive institutional approach to its Integrated Safety Management System (ISMS). This Description articulates the institutional requirements for all operations (at the main site, at nearby Site 300, or at any other sites where Laboratory employees and subcontractors work).

This Description contains the requirements for LLNL's ES&H Manual and Directorate Implementation Plans. Much of this Description explains safety management system mechanisms plus a work planning and authorization process. It addresses the Work Smart Standards (WSS) set and their incorporation into Laboratory operations. In particular, it includes restatements, clarifications, and new statements of institutional requirements for LLNL operations.

This Description is intended for use by LLNL's workforce and is available for those in the University of California (UC) and Department of Energy (DOE) organizations who review operations, verify compliance, and approve modifications.

Background

LLNL is a government-owned, contractor-operated, multi-program research and development facility. UC manages and operates LLNL under Prime Contract W-7405-ENG-48 for DOE. "Contract 48" defines the principles, working relationships, and contractual and legal requirements under which the Laboratory must operate.

The institutional ISMS requirements result from LLNL's careful examination of its approach to safety. They follow the guidance from DOE Headquarters and the DOE/Oakland Operations Office. They are consistent with Contract 48's requirements and adhere to the ISMS structure described by DOE. The requirements have been refined through an interactive process involving the Laboratory Director, Deputy Directors, and all Associate Directors (including selected members of their management, supervisory, and operational staffs).

Goal and Commitment

LLNL's safety goal is to continuously strive for a healthy, accident free, and environmentally sound workplace and community while providing the scientific and technical excellence needed to meet critical national missions. The Laboratory is committed to doing this while meeting the requirements of Clause 6.7 of Contract 48 and implementing the policy provided in DOE Policy 450.4 ("Safety Management System Policy").

The Laboratory affirms that it:

1) Understands and supports the Contract 48 requirement for an ISMS at LLNL and the opportunities and values of it.

2) Adopts DOE's ISM Objective, Guiding Principles, and Core Functions and the institutional requirements in this LLNL ISMS Description document.

3) Commits to implementing and using ISMS in all its programs, operations, facilities, and activities.

Environment, Safety, and Health (ES&H)

"Safety" throughout this document is used synonymously with environment, safety, and health (ES&H) to encompass protection of the public, the workers, and the environment (as defined in DOE Policy 450.4). Clause 6.7 of Contract 48 expands the definition of safety by "including pollution prevention and waste minimization."

The Laboratory regards protection of the environment and promotion of employee good health as essential components in its overall safety management system. Critical to the interface with Environmental and Health Systems is the responsibility of the Programs to appropriately consider and include these parts of "safety" in all their operations, facilities, and activities.

Safety Management Fundamentals

This Description identifies the core requirements that provide the foundation for safety management at LLNL. These requirements implement DOE's seven Guiding Principles and five Core Functions along with LLNL's Fundamental Guiding Principle (see below):

<u>DOE Seven Guiding Principles</u>

1) Line Management Responsibility for Safety
2) Clear Roles and Responsibilities
3) Competence Commensurate with Responsibilities
4) Balanced Priorities
5) Identification of Safety Standards and Requirements
6) Hazard Controls Tailored to Work Being Performed
7) Operations Authorization

DOE Five Core Functions

1) Define the Scope of Work
2) Analyze the Hazards
3) Develop and Implement Hazard Controls
4) Perform Work within Controls
5) Provide Feedback and Continuous Improvement

LLNL Fundamental Guiding Principle

Each worker, supervisor, and manager is directly responsible for ensuring his or her own safety and promoting a safe, healthful, and environmentally sound workplace and community.

The above fundamental requirements provide the necessary specificity and detail for ISM implementation through LLNL documentation. The ES&H Manual is the principal institutional mechanism for implementation.

Core Requirements

The comprehensive set of core requirements developed and presented in this Description has the following principal elements:

Accountability. Apropos the LLNL Fundamental Guiding Principle, all workforce members are held accountable for meeting the Laboratory's ES&H requirements. Accountability is established and enforced through the following primary means:

1) Communicate ES&H expectations to employees.
2) Reinforce expectations through timely verbal feedback.
3) Annually implement formal appraisal and salary actions for each employee.
4) Awards and recognition for notable contributions to ES&H.
5) Corrective action in cases of employee misconduct.

Safety Responsibility. Management is responsible for the safety system. Ultimately, it is responsible for safety at the Laboratory.

Management Chain. Organizations that authorize work identify a management chain for each work activity. Such organizations identify the individuals serving in the chain (i.e., first-level supervisor up to responsible Associate Director). The chain has clear roles, responsibilities, and authorities for managers, supervisors, and workers. It has direct control over the funding of the work activity. It exists for all LLNL operations down a clear line of funding and ES&H responsibility. The chain has full responsibility for implementing DOE's seven Guiding Principles and five Core Functions. Ultimately, it ensures that individuals perform work safely.

Subcontractors. LLNL's commitment to safety and ISM is formally extended to subcontractors and subcontract employees for whom LLNL has safety responsibility. Safety requirements are to be incorporated into all subcontracts and flowed down to lower tier subcontractors, as appropriate.

Graded Approach and Tailoring. ISMS at LLNL provides for a graded approach (i.e., different levels of rigor and formality) when applying controls commensurate with the hazards involved. To complement this, tailored controls address the hazards, satisfy the applicable requirements, and provide adequate protection to the public, workers, and the environment.

Work Planning and Authorization. Work is planned, reviewed, and authorized before the activity begins. An appropriate prestart review is conducted to validate satisfaction of the safety requirements. Once the work begins, it is appropriately controlled (workers are responsible for adhering to the safety controls; supervisors ensure the work is performed according to the defined work controls). Supervisors make sure workers have access to and knowledge about an activity's governing procedures and work controls.

Feedback and Improvement. Work activities are monitored to be sure the governing procedures and safety documents are being followed. Workers are to tell supervisors of safety problems or opportunities for improvement. A worker can stop work if there is an unsafe or unapproved condition. Each Directorate develops and operates a safety self-assessment program to guarantee a proactive approach to safety and to improve safety performance. Also, Directorates are responsible for root-cause analysis and correction of safety-related problems. After an activity's completion, Lessons Learned are to be shared to enhance operational safety and facilitate cost effectiveness.

Integration

Integration of program and safety planning from the Director down to individual workers is attentive to the Institution - Facility - Activity process. Basic to Laboratory integration and operations is the ES&H Manual and incorporation of its ISMS fundamentals. Worker involvement is critical to ISM. Thus, an important integration direction is a formalized upward involvement of workers as well as top down through the Institution - Facility - Activity process. In this context, all work activities are to be performed according to the provisions of the ES&H Manual with the assistance of ES&H Subject Matter Experts and ES&H Teams. Horizontal integration across the Directorates is accomplished through many established groups.

Directorate Implementation Plans. To demonstrate flow down to the working level, each Directorate has an Implementation Plan. Separate plans are needed because of each Directorate's unique programmatic mission coupled with different types of facilities, technical work, and

hazards. These plans reference specific implementing provisions for each ISMS requirement. They are subject to institutional review to assure compliance.

ES&H Manual. To be in line with the increased formalization brought about by ISM, the Laboratory has assembled broadly-used institutional ES&H documents into a formal document structure called the ES&H Manual. This new comprehensive Manual consolidates many documents into one convenient, online package. It includes what was formerly the Health & Safety Manual and the Environmental Compliance Manual. LLNL performs work to meet the requirements of the new Manual. Its requirements are based on the WSS set identified for specific Laboratory work and associated hazards. With the implementation of ISM, employees must understand the latest ES&H requirements and their responsibilities.

Communications and Training. The transition to an effective ISMS requires a comprehensive communications program that includes training all workers. Laboratory-wide communications and tailored training to support the ISM rollout began early in 1999. Communications goals include creating ISM awareness and sensitizing employees to environment, safety, and health issues. Training will be further tailored as ISM blends into daily work activities. The intent is for ES&H issues to be a routine part of all Laboratory communications.

Standards and Requirements

Contract 48 stands as the fundamental basis for Laboratory operations. It provides the legal foundation for all activities. Clause 6.7 of Contract 48 is the foundation of ISM and is consistent with DOE Policy 450.4.

Work Smart Standards. Clause 5.5 of Contract 48 contains the language providing for WSS. These standards establish workplace safety controls and are an integral part of ISM. DOE, UC, and LLNL collaborated in a Necessary & Sufficient (N&S) process to tailor a WSS set for LLNL. This WSS set replaced existing contractual ES&H requirements. An outside independent team of ES&H experts confirmed the standards to be appropriate and feasible for LLNL in March 1999. On August 5, 1999, the DOE/OAK Manager and LLNL Director gave signature approval for the WSS set, which was incorporated into Contract 48.

Transition to WSS. With the WSS set in Contract 48, the standards are formally part of the LLNL ISMS. The ES&H Subject Matter Experts and Deputy Director for Operations appointed committees like the ES&H Working Group are incorporating the set into the appropriate sections of the ES&H Manual. The intent is to implement the WSS set as expeditiously as possible, consistent with Contract 48 and approved WSS implementation plans.

Maintenance of WSS Set. The standards can be modified to meet the Laboratory's changing needs. A formal Change Control Process, using the N&S process, will provide an opportunity to keep the WSS set up-to-date.

Flow Down of Requirements. LLNL operations are addressed through safety management processes and controls noted in the ES&H Manual. This and other institution-level documents include formal processes for applying requirements locally at the Facility and Activity levels. A key to the flow-down process is the formal incorporation of the WSS set into the ES&H Manual.

Change Control Process

A formal Change Control Board (CCB) is to review requests for changes to this Description and to the currently separate ISMS Description for the LLNL Superblock. (The Superblock Description addresses hazards that require a higher level of formality and specificity than those for most other LLNL operations.) There are three members of the CCB, representing DOE/OAK, UC, and LLNL. They are appointed by their respective organizations. The CCB Chair is the DOE/OAK representative.

Schedule

On March 3, 1999, Secretary of Energy Richardson directed all Department and Contractor employees to "put ISM in place by September 2000." LLNL previously met its first major milestones when it delivered the first versions of the Superblock Description to DOE in October 1998 and this LLNL Institutional Description in December 1998. In parallel, the LLNL WSS set was completed and confirmed in March 1999. It was signed and incorporated into Contract 48 on August 5, 1999. Further accomplishments were made with the successful Superblock ISMS Phase I and II Verification completed in September 1999 and the DOE approval of the Superblock ISMS Description on September 30, 1999 contingent on addressing two items which have been done and the process proceeds for finalization. The second version of this Institutional ISMS Description addressing DOE/OAK comments and including LLNL items to make it more complete and understandable was completed in October 1999. Most recently, the Initial Verification of the LLNL Institutional ISMS was successfully completed in December 1999 and the implementation continues. Preparations proceed for the ISMS Final Verification. When this Verification is complete, the LLNL ISMS will be operational and will be continually evaluated by LLNL assessment processes.

Again, the LLNL goal is to meet Secretary Richardson's September 2000 milestone. It is also important for the Laboratory to meet Contract 48 requirements in preparation for the next contract in 2002.

1. BACKGROUND

The Lawrence Livermore National Laboratory (LLNL) is a government-owned, contractor-operated research and development facility managed and operated by the University of California (UC) for the Department of Energy (DOE) under Prime Contract W-7405-ENG-48 (Contract 48) (Ref. 1). Contract 48 defines the principles, working relationships, contractual requirements, and legal requirements under which the Laboratory must operate and is held accountable.

LLNL is a multi-mission national laboratory operated by DOE and committed to critical missions of national importance. The LLNL FY00 budget is $1.3 billion. The current Laboratory workforce consists of approximately 7000 Indefinite Career Employees with an additional 2200 Temporary Employees, Post-Doctoral Researchers, Supplemental Labor, and Participating Guests. In addition to the Laboratory workforce population, there may also be as many as 1000 contractors and visitors on-site per day. There are approximately 140 federal employees at the DOE/OAK Livermore Site Office, who operate under their own ISMS structure and documentation.

The main site of 1.2 square miles is adjacent to Livermore, California and a remote site of 11 square miles, designated Site 300, is 15 miles east near Tracy, California. There are approximately 470 buildings at the main site. Some were at the site when LLNL started in 1952 and there is major ongoing construction with the National Ignition Facility (NIF) being a very large and important new capability. The main site has facilities that range from regular offices and a visitor center to the Plutonium Facility in the Superblock located interior to the main site. Site 300 is used for high explosives and other higher hazard type activities. This Description applies to activities at the main site and Site 300, and to LLNL activities at other sites as described in Section 3.

LLNL operates successfully under a mixed matrix organizational structure of Program, Payroll, Facility, and Services Directorates. In this Description, the term “Directorate” includes equivalent organizations at LLNL. They range in workforce size from approximately 120 to 2400 individuals. In reality, most all of the Directorates have Program, Payroll, Facility, and Services operational functions, some with more of one than the other, and consequently have to be attentive to all aspects and the particular responsibilities of each. This comes about through the types of funding and the attendant responsibilities. Similarly, the term “Associate Directors” includes equivalents in this Description.

The creation and development of Integrated Safety Management (ISM) in DOE operations has evolved over time. The Price-Anderson Amendments Act (PAAA) in 1988 is seen as a start in ISM along with the fundamental changes brought about with the end of the cold war. Actions by the Defense Nuclear Facilities Safety Board (DNFSB) in their Recommendations 90-2 and 92-5, site visits by the Tiger Teams, and DOE Nuclear Safety Order upgrades led to increased attention and formalization in the DOE operations. The DOE initiation of the Necessary and Sufficient Standards in 1995, which became the Work Smart Standards (WSS), continued that process.

DNFSB Recommendation 95-2 combined several prior DNFSB Recommendations and considerations in reports and became the primary driver for ISM which is contained in the DOE Implementation Plan for DNFSB Recommendation 95-2. The DOE Safety Management System Policy, DOE P 450.4 (Ref. 2), of October 15, 1996, presented the structure to "provide a formal, organized process whereby people plan, perform, assess, and improve the safe conduct of work." It was "institutionalized through DOE directives and contracts to establish the Department-wide safety management objective, guiding principles, and functions." The applicable Department of Energy Acquisition Regulation (DEAR) amendment followed in 1997 and Clause 6.7, "Integration of Environment, Safety, and Health into Planning and Execution," became part of the UC DOE contract for LLNL on October 1, 1997. Direction and guidance on ISM continues to be developed and refined as the process proceeds with the Secretary Richardson's Memorandum of March 3, 1999, on "Safety-Accountability and Performance," (Ref. 3) and the revised Integrated Safety Management System Guide, DOE G 450.4-1A (Ref. 4), of May 27, 1999, being recent major items in this.

This Description articulates the institutional requirements for all LLNL operations and provides definition and elaboration of the critical aspects for the understanding and successful implementation of the ISMS.

2. PURPOSE

This LLNL Integrated Safety Management System (ISMS) Description provides a formally approved institutional structure for ISM developed by LLNL using written guidance and continued detailed interaction and coordination from DOE/OAK and DOE/HQ. It contains the LLNL institutional approach for the incorporation and implementation of the DOE Safety Management System Policy, DOE P 450.4 to "…systematically integrate safety into management and work practices at all levels so that missions are accomplished while protecting the public, the worker, and the environment." Upon final approval by DOE, it establishes the agreement on the content and processes for ISM implementation and continued utilization at LLNL.

This document contains the institutional requirements to be used for all activities at LLNL and in the development of the individual Directorate Implementation Plans necessary for the incorporation of the full ISMS at LLNL. It includes the major action criteria, methods, and milestones planned for the institutional implementation as well as the expectations of the Directorate Implementation Plans. Included are the considerations for the WSS set that was approved and incorporated into Contract 48 on August 5, 1999, resulting from a formal parallel action. The development, LLNL approval, and delivery of this LLNL ISMS Description on December 29, 1998 with Version 2.0 on October 1, 1999, and again through this updated version, satisfies a key requirement of Clause 6.7 of Contract 48 effective October 1997 (see Section 18A).

This Description includes restatements, clarifications, and new statements of the institutional requirements for all LLNL operations. These have been refined through an interactive process involving all of the Associate Directors and their staffs and operational personnel, the Deputy Directors, and the Director. The institutional requirements presented are a result of a complete reappraisal within LLNL of the safety approach using the requirements contained in Contract 48, the ISMS structure, and the current DOE environment. "Safety" throughout this document is used synonymously with environment, safety, and health (ES&H) to encompass protection of the public, the workers, and the environment as defined in DOE P 450.4. Contract 48, Clause 6.7 expands the definition of safety by, "including pollution prevention and waste minimization."

The similarities of missions, facilities, and activities at LLNL with the Los Alamos National Laboratory makes it useful and valuable in having basic consistencies in the respective ISMS Descriptions; both use a WSS set in the DOE unifying ISMS structure. With the UC and DOE/OAK connections, the Lawrence Berkeley National Laboratory ISMS has also been used in the preparation. Additionally, considerations and applicable items from other DOE Contractors have been incorporated in order to provide as complete a Description as is currently possible.

Intended users of this Description are all those in the LLNL workforce. Similarly, it is available to those in UC and DOE organizations with ISM, ES&H, oversight, and contract responsibilities.

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3. SCOPE

This LLNL ISMS Description presents the institutional requirements and major methods for the implementation of ISMS into all of the operations and activities at LLNL. It is based on the provisions of Contract 48 with the WSS set. This Description was prepared using the DOE/OAK guidance letter of August 18, 1998 (Ref. 5) and DOE G 450.4-1, dated November 26, 1997 (Ref. 6). Due consideration and use of these guidance documents and other relevant documentation was made throughout the preparation. The prior version addressed the DOE/OAK comments of March 5, 1999 (Ref. 7) and included LLNL items raised and accomplishments on actions put forward in the initial version. This version addresses DOE/OAK recommendations made in preparation for the Initial LLNL Institutional ISMS Verification, additional LLNL items, and the Opportunities for Improvement, Concerns, and other items contained in the Verification Report resulting from the Initial Verification completed in December, 1999. The incorporation of the WSS set into Contract 48 replaces the prior ES&H requirements of Appendix G. The WSS set contain many of the existing requirements, but there are some changes, some deletions, and some additional requirements.

LLNL accomplishes its Institutional role in the DOE ISM Institution - Facility - Activity process by a combination of Laboratory-wide or infrastructure functions and all of the Directorate or operating unit functions. The Laboratory-wide functions are those that affect all LLNL operations and employees. The Directorates contain the programs with the funding, have the people, operate the facilities, and conduct the activities. The word, "Institution" is used instead of "Site" or "Site-wide" because there are many LLNL activities elsewhere and they all need to be covered.

This Description provides the structure that shows the hierarchy of documentation, organization, and commitment for the implementation and continuance of the LLNL ISMS. It starts with this Description followed by a set of Directorate Implementation Plans, one for each Directorate. The Directorate Implementation Plans all use the ES&H Manual and Directorate specific documentation to address their particular operations, activities and hazards. Key features in ISM are the conscious consideration and application of the graded approach and the concept of "tailoring commensurate with the hazards." These are critical in having a practical and affordable implementation and utilization. Worker involvement is also important and is incorporated throughout where it was determined there can be contribution and value. The LLNL ISMS provides a formal process that replaces a variety of other formal, semiformal, and informal processes that have become part of the system over the history of the Laboratory.

The Description applies to the work authorized under Contract 48 which, in addition to R&D, includes administrative and operational support functions such as business operations, facility construction and maintenance, and security and emergency response activities. For some types of work, the Laboratory and DOE may mutually agree to authorization agreements for certain

facilities and/or activities. Currently, the Superblock is proceeding with a separate ISMS Description consistent with its DOE approved Authorization Agreements. Actions are proceeding so there is a single ISMS structure at LLNL. All facilities and activities at LLNL not specifically operating under an authorization agreement, or a separately approved ISMS Description, are authorized when following the processes described in this ISMS Description.

At LLNL, facilities are defined as individual buildings or groups of buildings with a common purpose like the Engineering Test Facilities at Site 300. The operational structure for the facilities is clearly centered on the Facility Point of Contact (FPOC) who is designated for each facility by the responsible Associate Director and is readily identifiable and available. For the areas between buildings, the responsible organization is Laboratory Site Operations (LSO). In situations where Programmatic activities are outdoors then the cognizant Program Directorate has the responsibility for the local area involved.

There are many LLNL interactions and personnel on assignment at a wide variety of outside organizations including other DOE sites, in the DoD, other governmental agencies, and overseas in various action and inspection capacities. This results in heavy travel traffic, with its own safety hazards, in the conduct of the business of the Laboratory. The LLNL personnel in these situations have had training in the LLNL ISMS, both Institutional and from their Directorates, and are expected to appropriately use the process in the conduct of their official activities and assignments. For those at other DOE sites (HQ, Y-12, Pantex...), either as visitors or on assignment, they are expected to work according to the ISMS and any accompanying agreement structures with the organizations operating at those sites. The Directorate Implementation Plans and any succeeding documentation provide the specifics for their offsite personnel and connections.

For the extensive, on-going LLNL activities in the operations of the Nevada Operations Office of DOE (DOE/NV), mainly at the Nevada Test Site (NTS), there are additional requirements and responsibilities. NTS is operated by DOE/NV as a national user facility for the conduct of potential underground nuclear tests, subcritical experiments, and other scientific activities that require isolation from the general public to ensure safety and security. LLNL is an important contributor to the on-going definition and execution of the DOE/NV missions through its experimental programs and projects conducted there. DOE/NV functions as the operations integrator for the activities of its contractors, the Laboratories (LLNL, LANL, and SNL), and the Albuquerque and Oakland Operations Offices. DOE/NV is responsible for the stewardship of NTS and its other sites, providing infrastructure, security, services, and technical support to the Laboratories and other programs through its contractors, the principal of which is the Management and Operations (M&O) contractor, Bechtel Nevada (BN). DOE/NV also funds the Laboratories to assist in the conduct of its operations, providing for the maintenance of unique Laboratory skills necessary for the DOE/NV missions and to assure LLNL compliance with DOE/NV requirements. Operating with the other Laboratories and contractors produces

additional relationships and connections requiring interaction and coordination. For the execution of its missions and the programmatic activities in its operations, DOE/NV has an existing structure of agreements, policies, and requirements. It provides directives and written assignments of authority for specific projects, facilities, and activities to LLNL, LANL, and other users at NTS. For the Laboratories, the assignments of authority are in the form of letters of delegation for specific facilities and activities, Activity Agreements, and user permits. For LLNL, these assignments name LLNL employees (e.g., Test Directors and Facility Managers) as agents of the DOE/NV Manager, with safety responsibilities for specific facilities and activities and a line management relationship to the DOE/NV Manager.

DOE/NV has an ISM Policy for the implementation of DOE P 450.4, and in the continued implementation of ISM in the DOE/NV operations, a restructuring of the controlling documentation and operational specifics is being developed and put in place. The DOE/NV contractors each have an ISMS and a Description. It has been agreed that each Laboratory and contractor is to use its ISMS and supporting documentation for the basic operational functions in its assigned facilities and associated activities. This addresses the situations where there are LLNL activities in BN and LANL facilities and the activities of others in LLNL facilities. To further define the process and the necessary connections, there is a Laboratory Interface Document prepared by LLNL, LANL, and SNL. For LLNL, the nature and specifics of the Laboratory projects, facilities, and activities in the DOE/NV operations, both current and potential, are such that additional documentation items are necessary. Appropriate Memoranda of Agreement between DOE/NV and DOE/OAK and through UC to LLNL providing for Laboratory involvement in the DOE/NV operations are necessary. Additional standards need to be incorporated in the proper context into the WSS set in Contract 48. These address the unique hazards in the facilities and activities in the DOE/NV operations and accommodate activities DOE/NV specifies as common activities for all of its contractors and users at its sites. The specified common activities result from cost considerations, operational efficiencies, and timeliness of action and reporting. To assist in the implementation of the DOE/NV standards and directives, a new Volume VI, Nevada Requirements, has been added to the ES&H Manual. Similarly, Directorate and programmatic documentation is being developed and made operational. This documentation includes additions to the Directorate Implementation Plans and the necessary structure of program management and implementation plans addressing the facility and activity specifics. Throughout all, an important part of the LLNL responsibilities is the support of the overall DOE/NV ISM process.

The reconciliation of the initial Superblock ISMS Description (Ref. 8) with the Institutional ISMS Description required a number of aspects to be addressed. These have been and continue to be done consistent with the completion of the impacting actions and documentation. The initial Superblock Description was completed and submitted to DOE in October 1998. The initial version of this Institutional ISMS Description was completed on December 29, 1998, and was different in a number of important ways. It contained new definitions and operational

methodologies that have resulted from the Laboratory-wide efforts to align with the DOE Integrated Safety Management Policy and the accompanying Guidance and other related documentation. Considerations for the WSS set were included. The initial Superblock ISMS Description was prepared using the requirements in Appendix G of Contract 48 as of October 1998 and in accordance with the Authorization Agreement for the Plutonium Facility of June 1997. The particular hazards involved require a high level of formality and specificity that are not required for most of the other operations at LLNL. This Institutional Description encompasses and provides for the Superblock activities by establishing the Institutional requirements and major implementation considerations using increasing formality, analysis, and documentation commensurate with the hazards. The current Authorization Agreements for the Superblock Facilities, Buildings 331, 332, and 334, were made effective January 28, 1999 (Refs. 9, 10, 11). A revised Superblock ISMS Description (Ref. 12), was completed in May 1999, using the guidance and documentation that was in effect on May 1, 1999. The Superblock ISMS Phase I and II Verification was conducted in September 1999 and DOE approval of the Superblock ISMS Description was made on September 30, 1999 (Ref. 13) contingent on addressing two items. Revision 2 of the Superblock ISMS Description (Ref. 14) was completed in October 1999 using guidance and documentation in effect on October 1, 1999 including Version 2.0 of this Institutional ISMS Description and formal comments from DOE through the year and from the September Verification. The contingent items have been addressed on schedule and the finalization is being done through the ISMS Change Control Board Procedure described in Section 13. The Superblock Description is appropriately subordinate to this Institutional Description. Upon completion of the Institutional Verification process further documentation hierarchy changes may be constructive and useful and incorporated accordingly.

To facilitate stability and use of this Description, Section 18, “Appendices” and Section 19, “Attachments” are placed outside of the Section 13 change control process. The Appendices contain the two Contract 48 clauses that provide the requirements for ISM and WSS and are the responsibility of those who negotiate and control Contract 48. The two attachments contain the principal actions in the implementation schedule and the planned communications program, and these both are subject to repeated changes because of forces and circumstances that are beyond the fundamental process for the Description. There is value in including both in the Description document to provide the basic time frame and milestones for ISM implementation.

The process and schedule for the LLNL ISMS has proceeded from the completion of the initial version of the Description on December 29, 1998, through Version 2.0 of October 1, 1999 and now to this revision addressing DOE comments and LLNL items. The Initial Verification was successfully completed in December 1999. This process will continue on to the Final Verification and through the implementation along with the incorporation of the WSS set so the ISMS is complete and operating by Secretary Richardson’s September 2000 date. The major items for this process are contained in Sections 14 and 19.

The initial version of this Description was prepared containing a number of important actions that needed to be accomplished in order to proceed with the implementation, notable in these were the ES&H Manual and the Directorate Implementation Plans. These actions have been addressed and this version is updated accordingly.

The Laboratory will periodically review this Description and make feedback and improvement changes. The initial review will occur at or about the anniversary date of its DOE approval. This provides a process to evaluate what is working and what needs improvement and to address any new initiatives and proposals. It permits a comprehensive maintenance of the Description and the opportunity to keep it current. This review goes beyond the action-oriented type of changes that are most likely in the ongoing change control process. The changes that result from this review will be submitted to the established Section 13 change control process and addressed accordingly.

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4. SYSTEM OVERVIEW

4.1 Introduction

The ISMS is the means by which ES&H requirements are integrated into the planning and execution of work. It consists of two related components: organizational structure (arrangements of people) and underlying principles and operations (functions or processes). DOE and its contractors must systematically integrate safety into management and work practices at all levels so that missions are accomplished through effective integration of safety management into all facets of work planning and execution. In summary, the overall management of safety functions and activities becomes an integral part of mission accomplishment.

DOE has defined seven Guiding Principles that are the fundamental policies for DOE and its Contractors to use in the management of safety. They are by title:

1) Line Management Responsibility for Safety

2) Clear Roles and Responsibilities

3) Competence Commensurate with Responsibilities

4) Balanced Priorities

5) Identification of Safety Standards and Requirements

6) Hazard Controls Tailored to Work Being Performed

7) Operations Authorization

DOE has defined five Core Functions for integrated safety management that comprise the underlying process for any work activity that could potentially affect the public, the workers, and the environment.

1) Define the Scope of Work - Missions are translated into work, expectations are set, tasks are identified and prioritized, and resources are allocated.

2) Analyze the Hazards - Hazards associated with the work are identified, analyzed, and categorized.

3) Develop and Implement Hazard Controls - Applicable standards and requirements are identified and agreed-upon, controls to prevent/mitigate hazards are identified, the safety envelope is established, and controls are implemented.

4) Perform Work within Controls - Readiness is confirmed and work is performed safely.

5) Provide Feedback and Continuous Improvement - Feedback information on the adequacy of controls is gathered, opportunities for improving the definition and planning of work are identified and implemented, line and independent oversight is conducted, and, if necessary, regulatory enforcement actions occur.

These five Core Functions are applied as a continuous cycle with the degree of rigor appropriate to address the type of work activity and the hazards involved. The ISM Work Cycle, as displayed in the pictorial below, shows the continuous relationship of the functions.

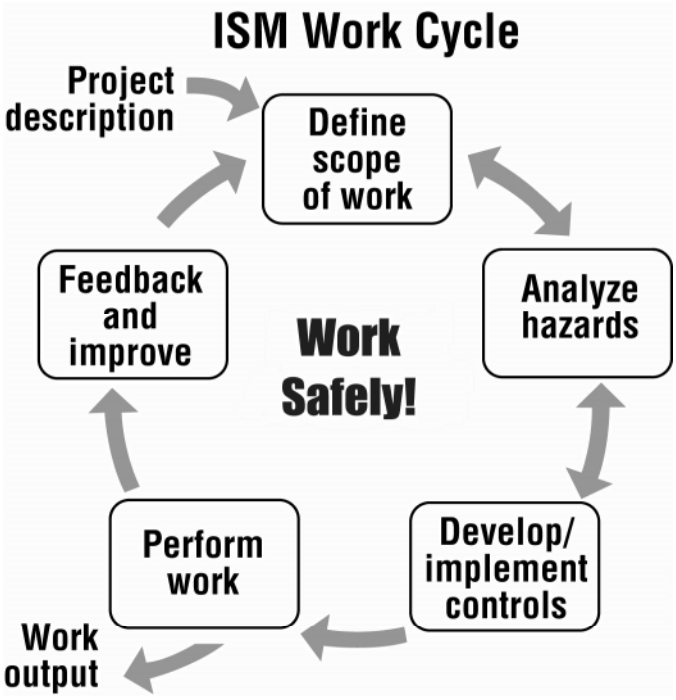

Figure 4.1: Basic ISM Work Cycle.

The Laboratory's ISMS functions are performed at the institutional level to clarify missions; to establish ES&H policies, objectives, and expectations; to select a tailored set of ES&H standards; to generate and authorize use of the ES&H Manual, other direction, and guidance; and to assess

overall system performance. Much of the information produced at the institutional level is also used to safely accomplish programmatic and institutional work at the facility and activity levels.

At the facility level, ISM takes the form of ensuring the safe operation of the facility infrastructure and the activities within the facility. This means that the Guiding Principles and Core Functions of ISM are followed not only in operating the facility, but in ensuring the activities performed within that facility are within the facility safety envelope and compatible with one another. For this reason, Facility management concurrence is required before activities can commence within the facility.

Although the Laboratory's ISMS functions performed at the activity level involve many of the same positions and organizations as those at the institutional level, the information generated and shared is different. At the activity level, management is concerned about technical approaches; reaching specific work objectives; resources and schedules; hazards associated with the specific work; acceptable controls for protection; hardware/facilities, methods, and staff; and authorization to proceed.

Organizational structure, functions, and information sharing are all necessary for the successful management of ES&H integration.

In a large laboratory such as LLNL with its diverse activities, some ES&H management processes must be common while others are based on local practices and needs that vary among the different programs and organizations. An appropriate balance must be attained between specific processes chosen or designed for particular facilities and activities and those of the institution. Common Laboratory processes may give economies of scale, simplify training needs for similar activities carried out in different organizations and facilities, and reduce risks related to confusion that may result from staff movement from organization to organization that is a characteristic of the matrix approach to R&D management. Locally developed processes and controls provide the flexibility to meet local needs. These benefit from decision making at appropriate levels in the programs and organizations, and involvement of staff who are more knowledgeable of the work and its risks so that reasonable and effective decisions can be made. Throughout all activities and in the ISMS itself, appropriate and graded use of quality assurance principles and processes as described in the ES&H Manual provides continued attention to the work and opportunities for improved operations and performance.

To achieve the benefits of both locally developed processes and controls and institutional consistency, the Laboratory uses the Guiding Principles and Core Functions as direction in creating management expectations for facility and activity work planning and execution while retaining a required level of institutional uniformity: work-specific tailoring at the activity level, tailoring to meet facility-specific management processes and controls, and uniform expectations at the institutional level.

LLNL, UC, and DOE develop objective measures against which the overall performance of the Laboratory's management system can be gauged. Mutually developed ES&H performance measures are important ISMS measures of effectiveness.

4.2 Goal

LLNL's safety goal is to continuously strive for a healthy, accident free, and environmentally sound workplace and community while providing the scientific and technical excellence needed to meet critical national missions.

In this goal, safety is used synonymously with environment, safety, and health (ES&H) to encompass protection of the public, the workers, and the environment as defined in DOE P 450.4. Contract 48, Clause 6.7 expands the definition of safety by, "including pollution prevention and waste minimization."

4.3 Philosophy

LLNL's overall safety philosophy is as follows:

1) In the context of carrying out our technical missions, safety is our most important day-to-day consideration.

2) Accidents are preventable through close attention to potential hazards and appropriate action by each individual and the responsible organizations.

3) Managers and supervisors are responsible for ensuring that an adequate system is in place to carry out work safely. For each work activity an identifiable line management chain is ultimately responsible.

4) Each supervisor is expected to ensure that all individuals reporting to them understand the safety expectations, governing work controls, and the means by which they can safely and successfully perform their assignments.

5) Each individual is directly responsible for ensuring their own safety and promoting a safe, healthful, and environmentally sound workplace and community.

4.4 Policy

It is each individual's responsibility to understand the Laboratory's safety goal and to participate in its pursuit; to determine in concert with others the best way to achieve the safety goal in conformance with Laboratory requirements; to use appropriate resources at their disposal; and to

ask for any help necessary to ensure a safe work environment while performing their broader set of job responsibilities and pursuing their technical, administrative, and/or craft objectives.

The role of managers and supervisors is to specify the technical, administrative, craft, and safety goals; assign specific responsibilities; appropriately define and manage ES&H issues; provide the necessary resources required to accomplish the objectives; assure compliance; monitor and evaluate performance; and reward each individual appropriately.

To achieve the safety goal, work at LLNL will be done using the ES&H Manual with the direct assistance and support of the Subject Matter Experts and the ES&H Teams.

Directorates must assure work is performed consistent with the requirements and expectations specified in the Institutional ISMS Description. The program (i.e., the Program AD or the organization serving in that capacity) is responsible for authorizing specific work activities. Programs are distinguished by having control of the funding. Programs authorizing work and the associated management chain are responsible for ensuring that all work in their purview is conducted safely.

4.5 ISMS Implementation Process

Each Directorate has an Implementation Plan that demonstrates how the requirements specified in this Description are satisfied. Directorate Implementation Plans reference specific implementing provisions for each of the ISMS core requirements in Section 6. When uniform practices are established in this Description or the ES&H Manual, each Directorate references the specified implementing provision(s). Directorate Implementation Plans define the safety roles, responsibilities, and authorities for each position-level within their Directorate. The Directorate Implementation Plans are subject to an institutional review and approval process to assure that the requirements established in this Description are satisfied.

Accompanying and complementing the Directorate Implementation Plans is the communications and training program described in Section 8.6 and Attachment II in Section 19.

4.6 Institution and Directorate ISMS Interface

This Description defines the ISM core philosophy, requirements, and parameters for the LLNL workforce and work environment. The requirements established in this Description serve as the basis for two key documents in Volume I, Part 2 of the LLNL ES&H Manual. In turn these documents define in detail the Laboratory's ES&H policies, practices, and individual responsibilities. The WSS set now in Contract 48 are the currently applicable ES&H standards and serve as the basis for the ES&H Manual.

All LLNL work activities are to be performed in conformance with the provisions of the ES&H Manual with the assistance of ES&H Subject Matter Experts and the ES&H Teams. Because of the significant differences in the nature of operations across the Laboratory, each Associate Director has the responsibility for ensuring organizational missions are carried out in conformance with the philosophy, parameters, and requirements defined in this Description and the ES&H Manual.

To facilitate this outcome, each Associate Director has the responsibility for preparing and using a Directorate Implementation Plan and maintaining any succeeding documentation. The Directorate Implementation Plan summarizes the mechanisms in place to ensure the efficient and effective flow down of the defined safety program. A requirements matrix is used to document the flow down of critical requirements from this Description and ES&H Manual through the Directorate-level ES&H structures to the individual worker. Regular reviews of each Directorate's ISMS implementation are undertaken to assure continued adherence of each Directorate's operations to the philosophy, requirements, and parameters established in this Description.

4.7 Structure for ES&H Management in LLNL Operations

The basic relationships and groupings of positions and organizational elements contributing to ES&H management at LLNL are depicted in Figure 4.2. This management structure is used for the full range of activities -- construction, start-up, routine operations, maintenance, emergencies, and demolition. The figure illustrates the Laboratory's formal lines of decision-making authority and responsibility and outlines the hierarchy of the organizational elements.

The Director is supported in the ES&H responsibilities by the Deputy Director for Operations (DDO) and the ADs, who have responsibility for the operation of the Laboratory's Programs, both scientific and technical, (e.g., Defense and Nuclear Technologies, Lasers), Payroll activities (e.g., Engineering, Chemistry and Materials Science), Facilities (e.g., Plutonium Facility, High Explosives Applications Facility), and Services (e.g., Plant Engineering, Hazards Control Department [HCD]).

The Laboratory Site Manager, who has responsibility for the Laboratory's ES&H support and routine institutional operations, supports the DDO. The Assurance Review Office (ARO) also supports the DDO. The ES&H Working Group serves as an advisory board to the DDO regarding ES&H issues.

The ADs have the direct responsibility and authority for conducting the Laboratory's programmatic work, and primary responsibility for applying and fulfilling the Laboratory's ES&H policies in the performance of that work. ADs must be aware of statutory, regulatory, and contractual ES&H requirements applicable to their operations and facilities. In meeting their obligations, each AD can simultaneously function in one or more of the following four

operational functions: Program AD, Payroll AD, Facility AD, and Services AD. Authorities for the different operational functions vary, but the Program AD has the primary responsibility. For many mission projects the Program AD is also the Payroll, Facility, and Services AD.

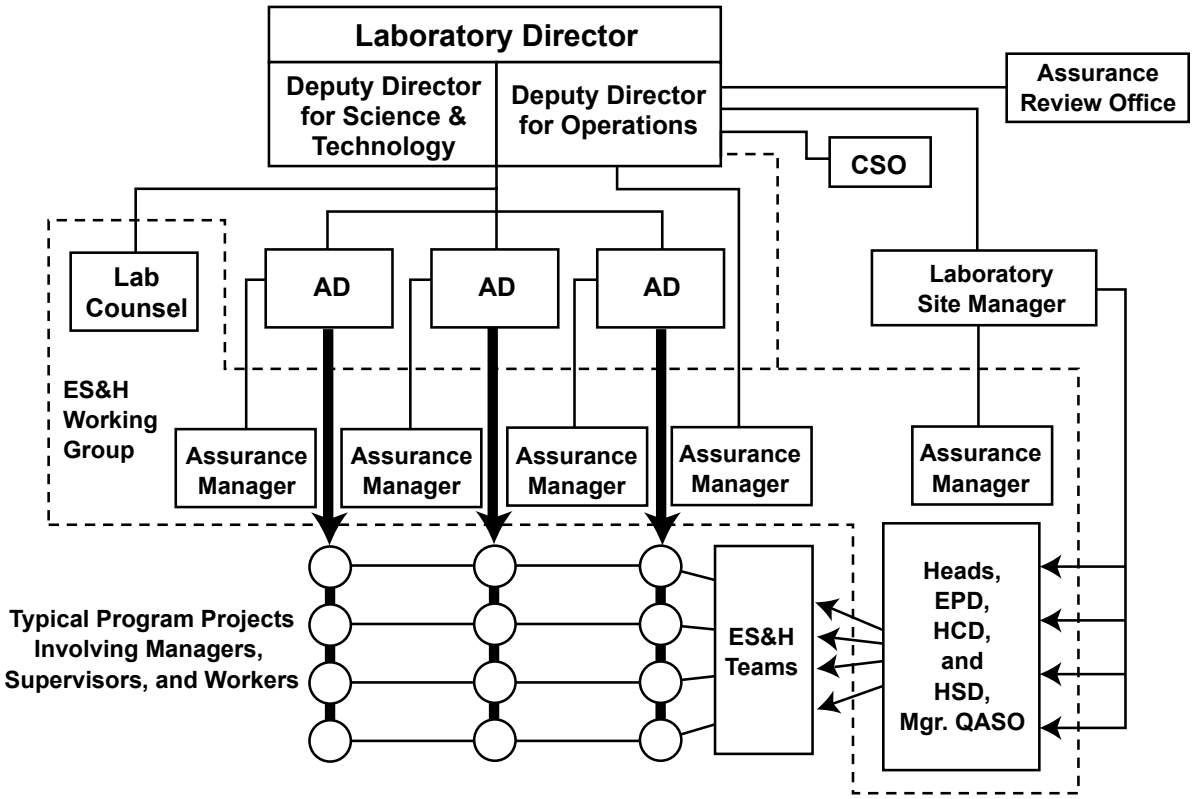

Figure 4.2: Basic organizational structure and connections at LLNL for operations and ES&H management.

Figure 4.2 also shows the ES&H Working Group composition and how it is connected into the entire organizational structure of the Laboratory. Figure 4.3 depicts the support structure by which ES&H organizations, Subject Matter Experts, and Teams interface with all Laboratory programs and organizations. The composition of each team is tailored to the work of specific programs and organizations. An ES&H Team can be configured with a wide range of disciplines. In addition, experts from outside the Laboratory can be called in when needed. ES&H Teams are assigned to each Directorate, LSO, and the Director's Office.

The Council on Strategic Operations (CSO) is a committee of AD-level managers that reviews and advises the DDO on operational issues. Approximately half of their time is spent on ES&H items having major impact on the Laboratory. During the development of the LLNL ISMS Description, numerous issues and the core requirements were presented to the CSO for consideration.

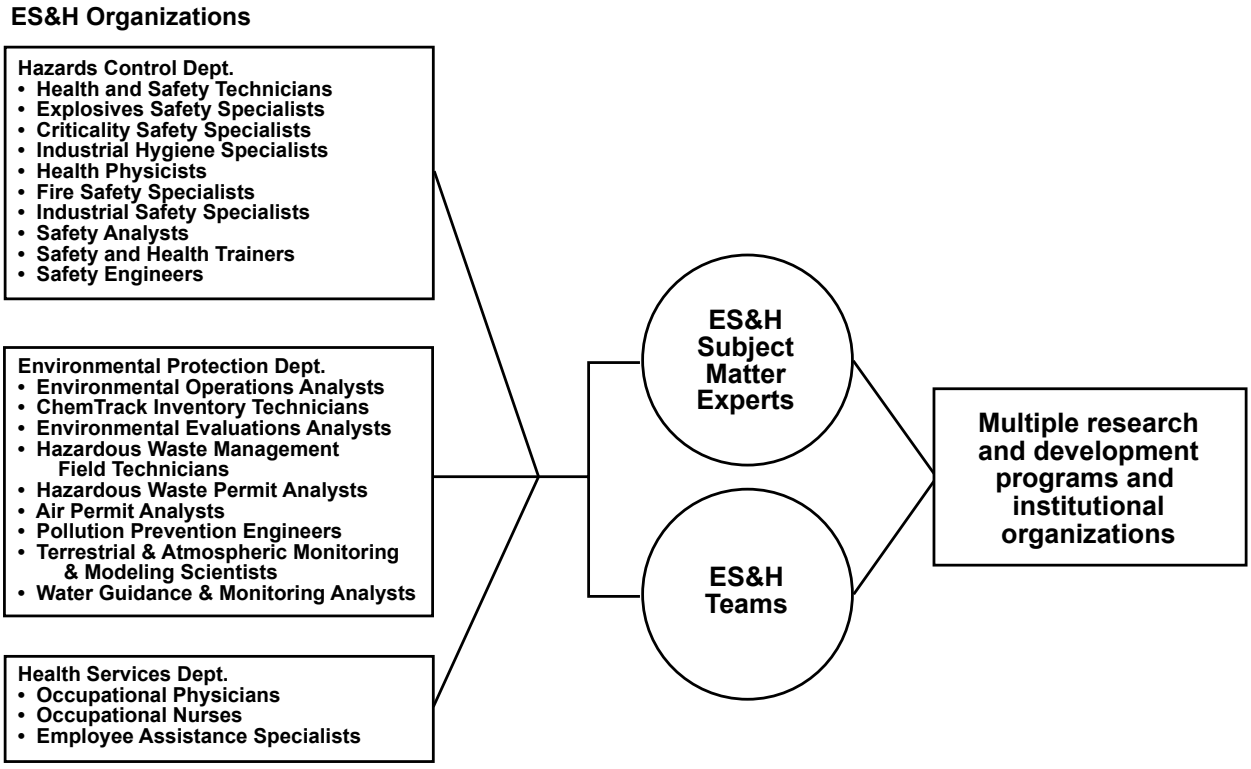

Figure 4.3: Support structure of the ES&H organizations and teams for LLNL programs and organizations.

4.8 Gap Analysis Process

4.8.1 ISMS Preparation

A gap is the identifiable difference between an established end point or milestone condition and an initial or current status condition. There are different kinds of gaps that can exist.

In the preparation of the LLNL ISMS, the first and most obvious gaps occurred as a result of the evaluation of the DOE ISM Policy and the accompanying documentation that provided a new formal and uniform structure for operations at DOE organizations. In addressing ISM at LLNL according to Contract 48, it was realized that the existing ES&H structure had too many differences and needed to be reset into the ISM structure. LLNL is proceeding to accomplish this through the preparation, improvement, and use of this Description. It was widely recognized within LLNL that many elements of ISM were already in place but that there were elements that were new or required change. Similarly, it was recognized that there were inconsistencies in the applications across LLNL coming from different needs and experiences.

Instead of doing a detailed gap analysis and then implementing a variety of local fixes, it was decided to conduct a complete reappraisal of the requirements for an LLNL ISMS and provide them in this Description. During the reappraisal, a set of the most important gaps was formulated and addressed. Considerations were made of the results from preceding internal ISM activities, including the ISM Steering Committee and the Director's July 1, 1998, deliverables from the Directorates, consisting of a safety assessment and preliminary improvement plan from each one.

The reappraisal was done in a careful and detailed process extensively reviewed and commented upon by principals from all of the LLNL Directorates and the Director's Office. The process provided the opportunity to incorporate LLNL values, knowledge, and experience into the LLNL ISMS and to accomplish the required alignment with the DOE ISM Policy. Important items addressed in the reappraisal included clarification of the ES&H responsibilities, accountability and management chains, connecting the ES&H responsibilities to the funding and technical expectations, use of the graded and tailored methodologies, and work injury and illness case management. The organizational structure for the DOE Guiding Principles and the DOE Core Functions in the Safety Management System Mechanisms Section, Section 6, was provided by the DOE/OAK guidance letter and used as the format for the reset requirements. It was also determined during the reappraisal process that there were additional elements required to have as complete an LLNL ISMS as possible. These included the LLNL Fundamental Guiding Principle and requirements for work injury and illness case management.

The Fall 1997 Integrated Safety Management Evaluation (SME) of LLNL (Refs. 15 & 16) included both positive and negative findings as well as a number of Opportunities for Improvement. The SME was conducted against a basic DOE ISM structure and contributed to making the broad case for the complete reappraisal of the LLNL ES&H system. Principal negative SME items were the LLNL and DOE assessment programs, work planning and hazard control processes, subcontractor safety management, emergency management, and policy and leadership for cultural change. During the reappraisal, there was continued attention to the SME findings to ensure that all of the issues raised were addressed and that the resulting system was as complete as possible. The SME items requiring attention are addressed in a separate formal action and reporting process.

4.8.2 ISMS Verification

A separate Gap Analysis has been developed for the Verification process that identifies the differences between the ISMS defined in this Description and what presently exists at the Laboratory. Each requirement in this ISMS Description is analyzed for status. The gaps are categorized into two types, System Documentation and System Implementation. Planned corrective actions, responsible individuals, and estimated completion dates were noted for

requirements to be reviewed during LLNL's Initial Institutional Verification. This Gap Analysis will be updated prior to the Final Verification to reflect the results of the Initial Verification and to focus on those aspects about to be reviewed.

The Gap Analysis is structured into two components, Institutional and Directorate. The Institutional section addresses those requirements that are being documented and implemented by the Laboratory as a whole. The Directorate sections, one for each Directorate, identify the gaps for requirements that are being documented and implemented at the Directorate level. A "roll-up" summary of the Directorate gaps is also generated.

The Gap Analysis draws upon a broad base of information regarding safety management at LLNL including the Fall 1997 SME described above, DOE/OAK safety assessments, and LLNL's own system of self assessments and independent reviews.

5. INTERFACES WITH ENVIRONMENTAL AND HEALTH SYSTEMS

5.1 Introduction

For the purpose of this Description, there is a broad definition of safety and efforts have been made to address ES&H in all aspects of the ISMS. However, there are interfaces specific to Environmental and Health Systems that deserve additional attention. This Section addresses the Laboratory's regard for protection of the environment and promotion of employee health as essential components in the overall safety management system. Critical to the interface with the Environmental and Health Systems is the responsibility of the Programs to make the appropriate considerations and inclusions of these parts of "safety" in all their facilities and activities, from planning and startup, through operations, to shutdown and disposal. The LLNL Environmental and Health organizations provide important expertise, capabilities, and support for the Programs. It is the constructive and continuing integration of these that can provide the benefits expected.

5.2 Environmental Systems

Attention to environmental requirements and potential environmental impacts are an integral part of safely planning, operating, or modifying a facility or activity. LLNL, in recent years, has put in place a strong and comprehensive environmental program to protect air, water, soil, cultural, and natural resources as well as to reduce waste generation through careful waste management and pollution prevention measures. This program enables LLNL to be attentive to the Contract 48, Clause 6.7 expansion of the definition of safety by "including pollution prevention and waste management." LLNL emissions to air, water, and waste streams are controlled, monitored, and reported in compliance with environmental laws and regulations. LLNL publishes an annual environmental report that summarizes the regulatory compliance status and provides the monitoring data collected during the year with an analysis of that data and a comparison with previous years. The LLNL ISMS requires the evaluation of the consequences of potential new environmental hazards in facilities and activities and implementation of appropriate controls or mitigation measures.

The environmental program is institutionally managed by the Environmental Protection Department (EPD). EPD is responsible for ensuring that the institutional environmental element of safety, as defined and used in this Description, is effectively carried out in the LLNL ISMS. The environmental program has three primary responsibilities:

1) Cleanup of contamination from past operations and restoration of sites.

2) Waste management (handling, treatment, and disposal of generated hazardous, radioactive, and mixed wastes).

3) Environmental compliance and monitoring support for ongoing activities.

The first and second of these responsibilities are environmental program elements within EPD. The second and third are the primary mechanisms through which the environmental element is integrated into the ISMS.

Each of LLNL's programs is responsible to comply with environmental requirements in the WSS set in Contract 48. The environmental program supports this in two ways:

1) Environmental Analysts provide direct environmental support to the programs through the ES&H Teams. They assist the programs in meeting environmental requirements in a timely, cost-effective manner.

2) Institutionally funded Environmental Subject Matter Experts provide specific guidance, oversight, and compliance/surveillance monitoring. They support the ES&H Teams through the Environmental Analysts.

The ES&H Teams are structured to provide consistent environmental guidance and solutions across the Laboratory's programs. Each ES&H Team includes an Environmental Analyst who has broad-based environmental expertise and has the lead responsibility for identifying, interpreting and communicating environmental requirements in each of their areas to the appropriate LLNL program personnel. The Environmental Analyst works in concert with the institutionally funded Environmental Subject Matter Experts to assist programs to understand and comply with all applicable requirements. In particular, they are responsible to assist LLNL personnel to integrate environmental planning and compliance into their projects and operations. This integration is done in a manner that ensures that safety is a prime consideration in meeting environmental requirements.

Environmental Analysts work with the program staff to understand their operational needs and to communicate requirements, best management practices, and best available control technologies applicable to a specific task. If required, the Subject Matter Experts work with the program contact to prepare the necessary permit applications and negotiate conditions with regulatory agencies on behalf of the program, as appropriate, to obtain the most workable and cost-effective permitting conditions.

Periodic re-evaluations result from many mechanisms: annual permit renewals, annual reports submitted to regulatory agencies or DOE, monitoring results, changes in regulations, and changes/additions to activities at the Laboratory. There are also other types of assessments that initiate reviews of activities such as National Environmental Policy Act (NEPA), Operational Safety Plan (OSP), and Facility Safety Plan (FSP) reviews, and facility self-assessments. These

reviews may result in the need to modify/obtain permits, develop additional mitigation requirements, or make changes in monitoring programs.

LLNL operations generate wastes and emissions despite ongoing efforts to plan and operate activities in a manner that eliminates the potential for environmental impacts. Processes and procedures are in place, including clear assignment of responsibilities and authorities, to ensure that wastes and emissions are appropriately controlled. Periodic visits by Environmental Analysts to facilities, reviews of logs and other required documentation such as OSPs and FSPs, and ongoing communications with ES&H specialists help to ensure that all appropriate controls are properly implemented and functioning.

Hazardous and radioactive waste management is also integrated into work planning and implementation through a number of routes. Hazardous Waste Management Field Technicians are assigned to most Directorate facilities to assist program personnel in managing their hazardous and radioactive wastes. Generators of hazardous waste are trained to understand applicable aspects of waste management as well as the importance of minimizing waste generation. The focus of this training is to ensure individuals understand their environmental responsibilities under the environmental element of ISM. The Waste Certification Program is aimed at ensuring waste-type specific (low level, mixed, etc.) certification program requirements are met. In addition, Hazardous Waste Management personnel work closely with generators to characterize and profile wastes and waste streams. As a final check, waste is sampled and analyzed under a directed quality assurance program to verify the accuracy of generator characterization.

Environmental Subject Matter Experts also conduct environmental surveillance, monitoring and analysis both on- and off-site, effluent monitoring and computer simulation modeling to assess impacts of ongoing LLNL operations on the environment. Other environmental activities conducted by the environmental program include monitoring sensitive and endangered species, wetlands, and cultural resources; conducting groundwater clean-up; transportation of hazardous materials; chemical inventory tracking; pollution prevention activities; and underground tank management. These are all taken into account as LLNL programs plan how they will operate in a safe and environmental compliant manner.

In addition to general ES&H training, specific environmental training courses have been developed to meet program needs. These include training for LLNL personnel on water management, air quality requirements, waste management, and other environmental compliance areas.

The Environmental Analysts conduct field visits and work individually with LLNL program staff to assess how well systems are working to achieve programmatic needs, control potential environmental impacts, and meet compliance requirements. Self-assessments conducted routinely by each responsible LLNL program are key in ensuring all environmental issues are

addressed. There are also numerous independent inspections by regulatory agencies and observations by DOE oversight personnel. These serve as important indicators that environmental regulations have been correctly interpreted and appropriate environmental controls are in place and functioning.

The Environmental Analysts in the field must also consider their responsibility for executing an integrated ISM program by evaluating the hazards associated with their work activities along with the environmental issues. Generally, when in the field doing assessments of programmatic activities, safety and health professionals are also available to assess the ISM safety- and health-related aspects of programmatic activities.

In summary, the LLNL environmental program and integration of environmental considerations into all Laboratory activities is being further enhanced by many of the mechanisms applied through the ISMS.

5.3 Health Systems

A key element of ISM is ensuring that the workers have the necessary physical capabilities and monitoring so their health is not adversely affected on the job. The management chain has the responsibility to see that those conducting the work are physically capable of those work tasks. The Health Services Department (HSD) at LLNL provides a comprehensive occupational health program to assist the management chain in meeting this key ISM element. The assessment of physical capabilities is a part of the last four of the five DOE Core Functions, as follows.

Analyze the Hazards - The physical requirements of the job must be assessed. For appropriate assignments, use of a "Job Demands' Worksheet" outlining the essential physical capabilities of the job can assist the management chain in identifying these requirements. In addition, required certifications (e.g., respirator approval, PAP, PSAP) or required medical surveillance (e.g., beryllium, asbestos exposures) may be identified.

Develop and Implement Hazard Controls - The management chain can identify whether or not specific professional review by HSD is required. For instance, a member of the management chain may control hazards by referring a potential worker to HSD for an examination to determine if the worker is physically capable of safely performing the identified tasks. Other prestart certifications, medical approvals, or baseline exams may also be performed.

Perform Work within Controls - Assessing any changes in a worker's physical readiness is a continuous responsibility for the management chain during the work process.

Provide Feedback and Continuous Improvement - Feedback information on the adequacy of safety controls is gathered. This is most often done through medical surveillance to determine if workers have been injured or developed illnesses during the work process.

Incorporated into the ISMS process, HSD has clinicians integrated into the ES&H Teams. These clinicians work with the management chain as well as with other ES&H professionals to help identify and control workplace hazards and to assess the need for special medical examinations before work is initiated.

A range of other resources is made available to individual employees and to the management chain who are planning the work process or assessing the adequacy of controls. LLNL provides medical consultations and an Employee Assistance Program for psychological assistance. Training, management consultation, and individual evaluations are available on workstation ergonomics and back injury prevention.

An important part of LLNL's overall safety system is the Return to Work Program. HSD has an active role in rehabilitation of the injured worker. HSD works with the management chain to return injured employees to work in a safe and timely way. This effort helps to reduce lost work time and permanent disability by giving injured employees modified work until they can resume full activity.

The overall health of employees is an important factor in their ability to work effectively and safely. HSD provides opportunities for employees to improve their general state of health and physical readiness. A health risk appraisal program is available that helps employees to identify and modify personal health risk factors. Special programs are available for initiating exercise, improving diet and controlling weight, understanding and controlling blood pressure, and managing stress. HSD also offers routine preventive services such as flu shots and cholesterol screening.

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6. SAFETY MANAGEMENT SYSTEM MECHANISMS

6.1 Introduction

This Section identifies the set of core requirements, applicable to all LLNL organizations, that provides the foundation for safety management at LLNL. These core requirements are addressed further, consistent with the purposes of this Description, in subsequent Sections as cited. They appropriately include the necessary specificity and detail required for implementation and use directly and through other LLNL documentation. The ES&H Manual is the principal mechanism for the implementation. A crosswalk matrix of the core requirements contained in this Section and the ES&H Manual is incorporated in Volume I of that manual to provide an expedient and readily maintained connectivity. The next level of implementation is through the Directorate Implementation Plans with the continuation in any succeeding documentation.

LLNL uses a work structure that serves to ensure work is performed safely and in compliance with applicable safety requirements. The primary focus of the LLNL ISMS is to provide the worker with a sound work environment, ensure necessary resources are made available to perform the job, and establish requirements for adequate procedures and controls to ensure the work is performed safely. It is to this end that the safety roles, responsibilities, and authorities are developed and practiced.

Planning the work activity is the starting point for analyzing and understanding hazards and determining specific safety requirements and controls. Figure 6.1 illustrates that safe work at the Laboratory is accomplished by applying the five DOE Core Functions discussed in Section 4 in the Institution - Facility - Activity process.

An activity must satisfy requirements based on its defined work scope and hazard analysis and the applicable controls established by the institution and the facility where the activity is conducted. The institutional requirements presented in this Description are used to ensure Laboratory-wide consistency. (See Section 3 for explanation of Institution.) Similarly, a facility may establish a required practice or limit to ensure consistency of operations within the facility. Information gained from evaluations of the work – operational results, worker suggestions, self-assessments, audits, etc. – is used to adjust and improve requirements and controls at the work activity, facility, and institutional levels.

LLNL's ISMS requirements are presented in a manner consistent with the DOE/OAK guidance letter (Ref. 5). LLNL has expanded on the seven DOE Guiding Principles by adding an LLNL Fundamental Guiding Principle. This additional principle is included to clarify and stress the responsibilities and accountability of every Laboratory employee and, accordingly, has been incorporated into the Roles and Responsibilities (See Section 6.2.1).

Section 6.2 defines the core requirements and the roles, responsibilities, and authorities associated with the LLNL Fundamental Guiding Principle and the three DOE Guiding Principles that especially pertain to all five DOE Core Functions while recognizing the values in all seven DOE Guiding Principles. Each of the subsequent Sections, 6.3 - 6.7, delineates the core requirements and the specific roles, responsibilities, and authorities intended to address the particular DOE Core Function covered in that section. Sections 6.3 - 6.7 also describe the safety management system mechanisms developed to ensure adherence to each of the corresponding DOE Guiding Principles. Again, "safety" throughout this document is used synonymously with environment, safety, and health (ES&H) to encompass protection of the public, the workers, and the environment as defined in DOE P 450.4. Contract 48, Clause 6.7 expands the definition of safety by, "including pollution prevention and waste minimization." In a similar context, the use of "hazards" includes environment and health hazards as well as safety hazards.

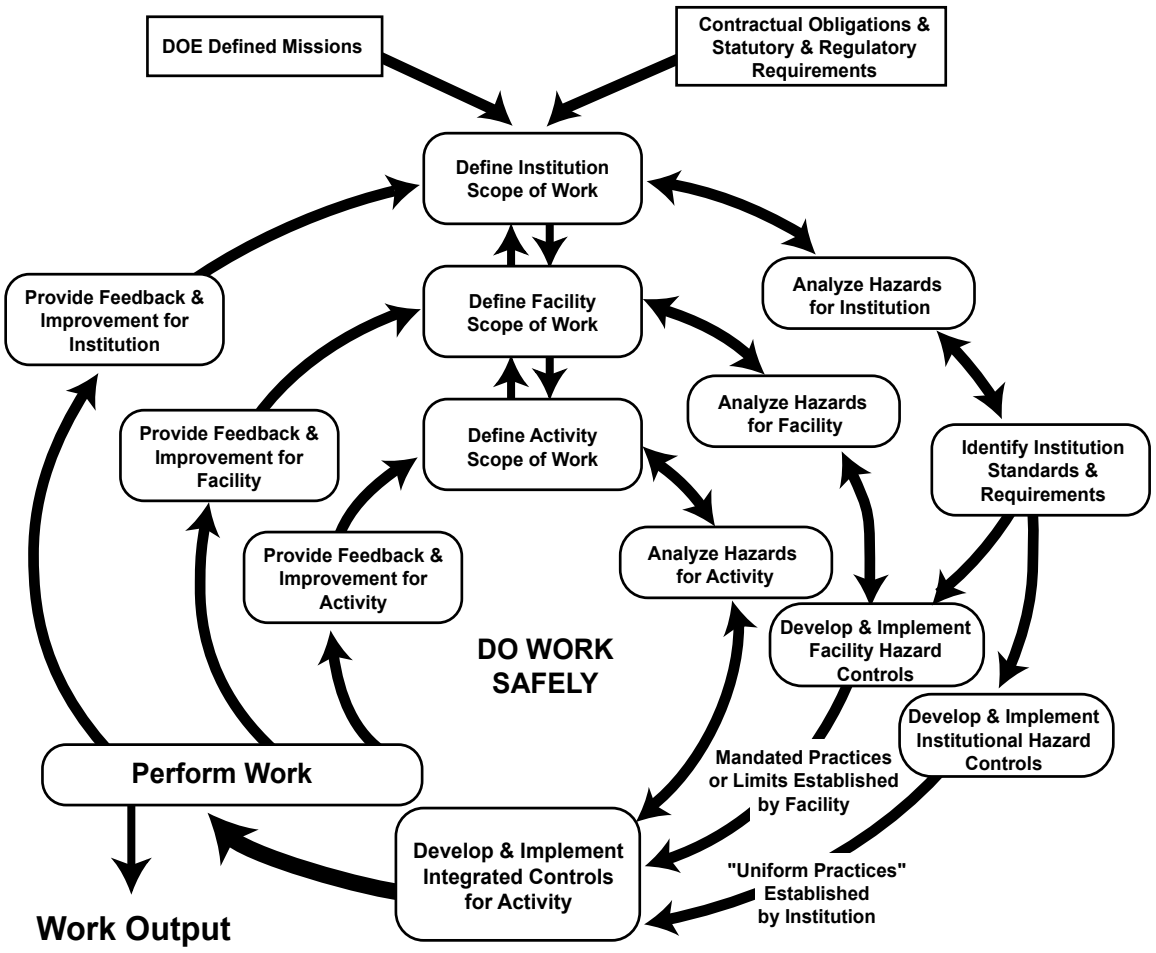

Figure 6.1. Institution - Facility - Activity ISM Work Cycle Structure for LLNL.

6.2 Roles and Responsibilities

6.2.1 LLNL Fundamental Guiding Principle

Each worker, supervisor, and manager is directly responsible for ensuring his or her own safety and promoting a safe, healthful, and environmentally sound workplace and community.

6.2.1.1 Accountability

1) The Laboratory's goal, simply, is to practice safety by taking actions to avoid the potential for injury to people or damage to property. The principal means of establishing and enforcing accountability for ES&H are: a) communicating ES&H expectations to employees; b) reinforcing expectations through timely verbal feedback; c) formal appraisal and salary actions implemented annually for each employee (see 6.2.2.1); d) awards and recognition for notable contributions to ES&H; and e) corrective action in cases of employee misconduct. Corrective action policies and procedures are contained in the Laboratory's Personnel Policies and Procedures Manual, Section E, II. Corrective Action.

2) Each employee is directly responsible for ensuring his or her own safety and the safety of others that could be impacted by their actions. All members of the workforce are held accountable for meeting the Laboratory's ES&H requirements as defined in this Description and the WSS set in Contract 48, and as detailed in the LLNL ES&H Manual and other approved manuals, plans, and procedures.

3) Accountability applies to all levels of employees including managers and supervisors and contains positive reinforcement for meeting Laboratory safety expectations and negative consequences for failing to do so. The management of each Directorate is responsible for having in place effective processes to implement, measure, and reinforce Laboratory safety expectations. Each Directorate is to use its Directorate awards and recognition program to promote exemplary safety behavior and performance.

4) Each Directorate will hold its employees accountable for compliance with Laboratory ES&H requirements through personnel processes such as performance appraisals, ranking, salary management actions, awards and recognition, and the application of corrective action. In addition:

   a) Each worker, immediate supervisor, and manager is directly responsible for ensuring accidents and injuries are properly reported. Accurate and complete reporting is necessary.

b) All employees are responsible for bringing safety concerns promptly to the attention of the appropriate manager or supervisor for resolution. If a satisfactory response is not received, then the senior manager for the organization should be contacted and then the Laboratory Site Manager.

5) Feedback and corrective action will be taken consistent with Laboratory Personnel Policies and Procedures for violations of Laboratory ES&H requirements. Feedback may be verbal or written. Corrective actions may include the following depending on the nature and severity of the violation: written warning, suspension without pay, permanent or temporary salary reduction, demotion, and dismissal. Corrective actions must be coordinated through the Office of Staff Relations to assure uniform application within the Laboratory.

6) Each Payroll organization is to maintain records of all safety awards and corrective actions it administers. A summary of these records is to be reported to the DDO no later than one month after the end of each fiscal year, starting in the year 2000. The DDO is to compile these reports into a Laboratory summary for management information and use.

7) When an incident or a systemic failure occurs that affects worker safety, the environment, or public health, the organization authorizing the work is responsible for ensuring an investigation of the relevant circumstances or assisting DOE investigators in conducting a review that falls within their purview. Necessary changes are to be made to the relevant policies, procedures, and/or hardware based on the findings of the review by the responsible organization.

6.2.2 DOE Guiding Principle 1 - Line Management Responsibility for Safety

Line management is responsible for the safety system and is ultimately responsible for safety at the Laboratory.

6.2.2.1 Safety Performance Directly Affects Appraisals and Salary Actions

1) Safety expectations are to be established for each employee, including supervisors and managers. Expectations are to be documented and communicated and the employee given the opportunity to provide feedback.

2) A substantive assessment of safety performance is to be included in each individual's performance appraisal, addressing expectations and accomplishments. For managers and supervisors, the appraisal is also to address performance in establishing and implementing safety processes.

3) Safety responsibilities and safety performance are to be explicit considerations during the annual ranking process and important factors in determining salary actions and promotions.

6.2.3 DOE Guiding Principle 2 - Clear Roles and Responsibilities

Clear roles and responsibilities are established and maintained.

6.2.3.1 Safety Roles, Responsibilities, and Authorities (RRAs) for Organizations and Individuals Are Clearly Defined

1) The program organization is responsible for authorizing work. Program organizations are distinguished by having control of the funding as well as responsibility to the sponsor for accomplishing the programmatic mission or activity.

2) The responsibility for work authorization may be delegated to another organization along with the funds to accomplish a specific work element. All delegations of work authorization responsibility must be formally documented and approved by the management of each Directorate involved. Irrespective of the number or level of work authorization delegations, the program organization retains ultimate responsibility back to the sponsor for the conduct of the work.

3) Work performed as services by one organization for another is an area of particular concern requiring special attention. The appropriate division of safety RRAs between the requesting and the services organizations, based on the type of services, is specifically addressed in the ES&H Manual.

4) The organization authorizing work is responsible for the activity's conduct, including accomplishing the technical objectives and safety requirements within the defined budget. The individuals responsible for: a) authorizing the work activity; b) validating that the proposed work falls within the established safety envelope(s) (i.e., facility and/or operational concurrence); and c) supervising the specific work (i.e., ensuring work requirements are met) must be clearly identified and their safety RRAs clearly defined.

5) The individual supervising work is responsible for identifying the organizational positions associated with the work activity and the corresponding safety RRAs. The requirement for safety RRAs may be satisfied by one or more of the following: a) referencing a position-specific ES&H responsibility statement in the Directorate Implementation Plan and any succeeding documentation; b) listing the ES&H responsibilities assigned to the position as delineated in ES&H documents (e.g., ES&H Manual, FSPs, OSPs, etc.); or c) using an equivalent approach defined in the Directorate Implementation Plan and any succeeding documentation.

6) The position-specific safety RRA information is to be provided to the individual performing the work and be readily accessible to others as described in the Directorate Implementation Plan and any succeeding documentation.

7) To ensure that facilities are properly managed, coordinated, and conducted, each Facility AD is responsible for identifying a Facility Point Of Contact (FPOC) and an alternate for each facility to fulfill responsibilities identified in the ES&H Manual.

8) Each Directorate is to have an Assurance Manager to provide independent oversight of the Directorate's organizations, facilities, and activities to assure the proper implementation of the safety program.

9) LLNL's ES&H organizations are responsible for supporting the management chain by participating in work activity planning, monitoring operations for compliance, and providing the information needed to the appropriate staff and management to help maintain a safe work environment.

6.2.3.2 The Management Chain Is Defined for Each Work Activity

1) For each work activity, the individuals serving in the management chain (i.e., first-level supervisor up to the responsible Associate Director) are to be identified by the organization authorizing the work. The management chain has direct control over the funding for the work activity. Figure 6.2 shows a basic framework of the overall structure for the LLNL mixed matrix organization in an extension and clarification of the operational functions, now comprised of Program, Payroll, Facility, and Services. In this basic framework, the management chain exists for all LLNL operations down a clear line of funding and ES&H responsibility both directly and through formal Delegation and Acceptance Agreements. Nominal and special case scenarios have been demonstrated and Section 8.4 presents additional information and four typical operational cases. Many Associate Directors have all operational functions in their Directorates. The first-line supervisors are key individuals in the structure; knowing their people, the work, and the structure both up and down as well as across the structure.

2) The management chain is responsible for: a) defining the scope of work; b) ensuring that the hazards control system is effectively implemented; c) ensuring that workers have the skills, knowledge, and abilities (SKAs) to initially evaluate the hazards associated with an activity; d) ensuring that workers have the SKAs, including physical capabilities, to perform the assigned work safely; e) authorizing the defined work, subject to the appropriate controls; f) ensuring that the workers perform the work safely and in conformance with applicable institutional, facility, and activity controls; g) monitoring and, as appropriate, strengthening the work activity's safety performance; and h) soliciting worker input.

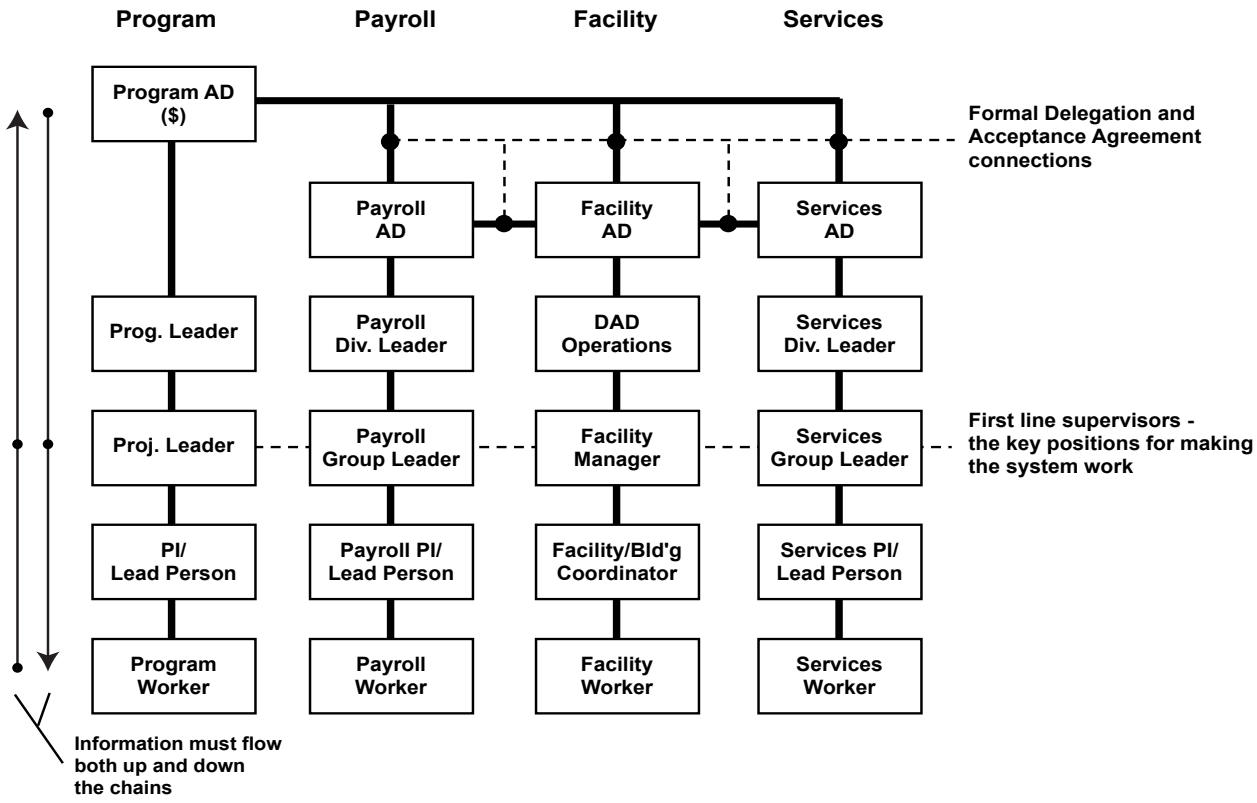

Figure 6.2. Use of the basic framework of operational functions provides clear management chains for all LLNL operations in the overall structure for the LLNL mixed matrix organization.

6.2.3.3 Processes for Case Management of "Lost and Restricted Work Days" Are Defined

1) The objective of a case management program is to return injured personnel to work as soon as reasonably possible consistent with the individual's personal health and safety.

2) Each Associate Director is responsible for putting in place within their organization a "lost and restricted work days" case management program consistent with LLNL's institutional case management program guidelines in the ES&H Manual.

6.2.3.4 LLNL's Commitment to Safety and ISM is Formally Extended to Subcontractors and Subcontract Employees for Whom LLNL has Safety Responsibility

1) To ensure that the Laboratory's commitment to safety and ISM is formally extended to all of its subcontractors, lower-tier subcontractors, and their employees, safety requirements are to be incorporated into the subcontracts and flowed down to the lower-tier subcontractors, as appropriate. The subcontractors are responsible for the flow down of safety requirements to their lower-tier subcontractors and the safety interactions with them.

2) Selection of the appropriate subcontractor safety requirements is to be done through use of the provisions of Section 7.3 with the Work Activity Authorization Structure in Table 7.2 and the ES&H Manual. These provide a graded approach to the hazards of a planned work activity. All applicable hazards are to be included: the Laboratory's work activity and facility work area hazards and the subcontractor's work activity hazards.

3) The subcontract safety requirements are to be prepared and maintained consistent with the flow-down requirements of Contract 48, Clause 6.7. These safety requirements are to be applied to subcontracts for all work using the Section 7.3 Work Authorization Level categorization. The Procurement and Materiel Department (P&M) is to use Contract 48 and Description requirements and the categorization determination to select the appropriate subcontractor safety requirements according to P&M Procedures.

4) The organization requesting a subcontract for work is to evaluate the planned subcontract work using the Integration Work Sheet (IWS) process as described in this Description, assign a Work Authorization Level consistent with the Work Activity Authorization Structure, and provide the applicable hazards by completing the Subcontract Hazards List, as described in the ES&H Manual. The appropriate ES&H Team is to be used to assist the requesting organization in making the determinations, as necessary. The appropriate ES&H Team is to be notified of all requests for a subcontract where the work is categorized as Work Authorization Level 2 or greater and is to be used accordingly. Subcontractor interaction on the development of their hazards and controls may be necessary and can be facilitated through use of a generic or tailored Task Identification Process (TIP) List.

5) The subcontractor is to be informed of the applicable Laboratory hazards for the work activity and obtain the appropriate training equivalent to the requirements in this Description and the ES&H Manual.

6) A subcontractor performing work categorized as Work Authorization Levels 1 and 2 is to be provided the basic safety tenets of Contract 48, Clause 6.7. A subcontractor performing work categorized as Work Authorization Level 3 or greater is to be required to manage and perform the work according to the subcontractor's safety management system, which as a minimum

must fulfill the requirements of Contract 48, Clause 6.7 and be available for Laboratory review through P&M. In addition, a subcontractor performing work categorized as Work Authorization Level 4 or greater is to be required to provide a site- and/or job-specific safety plan based on its safety management system. P&M is to obtain this plan. The requesting organization and the appropriate ES&H Team are to review it for operational and technical accuracy and completeness. Then, together with P&M, they provide the approval through P&M.

6.2.3.5 Safety Documents Are Written So That They Are Readily Understandable by the Individuals Performing and Managing the Work

1) The purpose of the Laboratory's safety documents (i.e., manuals, plans, and procedures) is to enable all employees, subcontractors, and visitors to work safely and in an environmentally sound manner.

2) The authors and approving organizations of safety documents are responsible for ensuring that instructions are workable and readily understandable to the individuals performing and managing the work. The authors and approving organizations are likewise responsible for ensuring that safety documents are consistent with applicable rules and requirements.

3) In situations where requirements are particularly complex or ambiguous, the organization authorizing the work is to use the appropriate ES&H professionals and other Subject Matter Experts to interpret and assist in developing ways to satisfy requirements.

4) Workers are to be provided an opportunity to participate in the development of operating procedures specific to their work activities.

5) The resulting safety documents are to be readily available to all individuals who need access to the information.

6.2.4 DOE Guiding Principle 3 - Competence Commensurate with Responsibilities

Personnel possess competence commensurate with responsibilities.

6.2.4.1 Individuals Are Qualified to Perform Assigned Work

1) Each individual must possess the necessary skills, knowledge, and abilities, including physical capabilities, to carry out their assigned tasks. The base skills are to be ensured by the Payroll organization.

2) The individual supervising the work activity is responsible for identifying: a) the qualifications, including appropriate medical certifications, and surveillance necessary to carry out the work and b) the individuals with the qualifications and training to perform the work.

6.2.4.2 Individuals Receive Appropriate Job-Specific Safety Training

1) The individual supervising the work activity is responsible for ensuring that the training necessary to do the assigned work safely is identified and communicated to the Payroll organization.

2) All personnel are to receive training to perform their work in a safe and environmentally sound manner. The Laboratory provides the training needed to enable its employees to meet safety standards and facility- and activity-specific requirements.

3) Accomplishment of safety training is documented in the Livermore Training Records And Information Network (LTRAIN).

4) The organization authorizing work is responsible for ensuring that the resources necessary for required safety training are provided by that organization or another appropriate organization.

5) Payroll organizations are to assure that their personnel have the required training.

6) The work activity supervisor is to ensure that the personnel supporting their activities have the required safety training, including facility-specific training.

6.2.4.3 Individuals Receive Appropriate ISMS Training

1) All Laboratory employees are to be trained in the principles and functions of ISMS at a level appropriate for their specific job duties and responsibilities. The Laboratory is responsible for developing the institutional ISMS training courses.

2) Each Directorate is responsible for ensuring that their employees receive ISMS training, including facility- and activity-specific training as appropriate, in an effective and timely manner.

3) Each Directorate is responsible for assuring that the required ISMS training is appropriately documented in the LTRAIN system.

6.3 Work Planning and Prioritization

6.3.1 DOE Core Function 1 - Define the Scope of Work

6.3.1.1 The Work Activity Is Defined

1) The organization authorizing the work activity is responsible for: a) stating the technical objectives; b) defining the work elements to be performed; c) identifying the facility in which the work will take place; and d) identifying the individual who will be supervising the work activity.

2) The management chain that results from these determinations is responsible for ensuring the work activity is properly analyzed, controlled, performed, and monitored.

6.3.1.2 The Graded Approach Process Is Consistently Applied

1) An individual may initiate and perform a work activity without the imposition of formal work controls if it involves only activities commonly performed by the public as explained in the ES&H Manual. In no instance shall an individual initiate or perform a work activity not commonly performed by the public without the approval of an appropriate person in their management chain.

2) It is the responsibility of the organization authorizing work to ensure that the greater the hazards associated with an activity the more rigorous the work planning process that will be required. The objective of the work planning process is to ensure the hazards associated with the work activity are clearly understood and appropriately addressed. To ensure this objective is met, relevant ES&H professionals and Subject Matter Experts are to be used during the work planning process, as appropriate.

3) Consistent with the provisions and levels described in Section 7 and the ES&H Manual, the individuals responsible for: a) authorizing the work activity; b) ensuring the facility and/or operational safety envelope; c) supervising the work; and d) providing the safety support are to be involved in the analysis of the hazards and a determination of the appropriate work controls to be applied to the work activity.

4) Work is to be authorized by the appropriate level of management as described in Section 7 and expanded upon in the ES&H Manual.

6.3.2 DOE Guiding Principle 4 - Balanced Priorities

Resource allocations are balanced, making ES&H a priority in project planning and execution.

6.3.2.1 Resource Planning Processes Ensure Balanced Priorities

1) The organization authorizing work is responsible for allocating sufficient resources to ensure safe and compliant operations.

2) A work activity proceeds only with a reasonable expectation by the management chain that there will be sufficient resources to ensure safety requirements are satisfied over the length of the project, including closeout activities.

6.4 Hazards Analysis

6.4.1 DOE Core Function 2 - Analyze the Hazards

6.4.1.1 Hazards Are Identified and Analyzed for All Work Activities

1) The organization authorizing a work activity is responsible for ensuring that the associated hazards are identified. ES&H professionals are to be used in the hazard identification process, as appropriate. Workers are to be provided an opportunity to participate in the process of identifying hazards.

2) Hazards are to be identified and analyzed consistent with the provisions of the ES&H Manual.

3) Each individual is responsible for making conscious considerations of the safety implications of their actions whether or not formal hazards analysis and documentation are required.

6.4.1.2 Integration Work Sheets Are Developed for Appropriate Work Activities

1) The intent of the Integration Work Sheet (IWS) is to ensure front-end identification of all hazards associated with a work activity. An IWS is required when a work activity is beyond that commonly performed by the public. The organization authorizing a work activity is responsible for ensuring that an IWS is prepared, reviewed, and approved consistent with the provisions of Section 7 and the ES&H Manual. The format and instructions for the IWS are contained in the ES&H Manual. The completed IWS provides the authorization for the work activity once a prestart review confirms readiness.

2) At the discretion of the organization authorizing the work, preparation of the IWS may be delegated to either the organization responsible for: a) supervising the work activity or b) the facility safety envelope. Any delegation of the responsibility for preparing the IWS is to be documented as described in the ES&H Manual.

3) The organization responsible for ensuring the facility and/or operational safety envelope(s) is to review and concur with the IWS.

6.4.1.3 Appropriate Sections of the ES&H Manual Are Applied in the Process of Analyzing Hazards

1) The specific hazards identified with the work activity are to be analyzed according to the requirements of the applicable sections of the ES&H Manual and by the use, as necessary, of the appropriate ES&H professionals.

2) The identified hazards are to be clearly communicated to all involved in the activity.

3) The organization authorizing the work activity and the individual supervising the work are responsible for periodically reviewing the hazards associated with the work activity as described in the ES&H Manual.

6.5 Hazard Mitigation and Control

6.5.1 DOE Core Function 3 - Develop and Implement Hazard Controls

6.5.1.1 Uniform Processes Govern Development of Safety Documents

1) Uniform requirements and processes are to be applied across the Laboratory for consistent and comprehensive development and completion of the safety documents cited in this Description as well as other major safety documents by using the provisions contained in Section 7 and the ES&H Manual. Particular attention is to be applied in the development of the Safety Analysis Reports and the Technical Safety Requirements for nuclear facilities to the specific requirements provided in the ES&H Manual. The described requirements and processes provide the essential conditions, content, format, and other specifics for these documents. Appropriate implementation and utilization of applicable WSS are to be incorporated as described in the ES&H Manual.

2) A uniform process is to be applied across the Laboratory for the development of safety and safety-related procedures consistent with the provisions established in the ES&H Manual. This process identifies when procedures are to be developed, specifies content based upon the hazards being managed, and provides a recommended format for structuring the procedure.

6.5.1.2 Requirements in the ES&H Manual Are Applied in the Process of Developing and Implementing Controls

1) The individual supervising the work activity is responsible for ensuring that tailored controls are developed for each hazard associated with the work activity. The tailored controls including the appropriate incorporation of engineered and administrative controls are to be developed and implemented consistent with Section 7 and the ES&H Manual.

2) As appropriate, Subject Matter Experts are to be used in development of work controls.

3) Workers are to be provided an opportunity to participate in development of the operating procedures.

4) The organization authorizing work is responsible for approving the work controls and ensuring that appropriate and graded use of quality assurance principles and processes as described in the ES&H Manual are incorporated and used.

5) The designated controls are to be clearly communicated to all involved in the activity.

6) The organization authorizing the work activity and the individual supervising the work are responsible for periodically reviewing and ensuring the adequacy of the controls associated with the work activity and the effectiveness of the engineered and administrative controls incorporated.

6.5.2 DOE Guiding Principle 5 - Identification of Safety Standards and Requirements

Safety standards and requirements are identified and implemented. The basis and particulars are presented in Sections 10 and 12.

6.5.2.1 Programs for Preventing Injuries Are Defined

1) Each Directorate is responsible for having in place defined programs to prevent injuries. An ergonomics program developed consistent with the ES&H Manual is an example of a defined program to prevent injuries.

2) Each Directorate is responsible for analyzing all the injuries associated with their organization's operations and facilities.

3) The HCD will provide each Directorate with injury statistics and related information.

4) Using resources such as the Lessons Learned program, each Directorate is responsible for assessing whether existing practices or conditions could materially contribute to the organization's accident and injury rates.

5) Each Directorate is responsible for developing programs to address: a) the specific injury/illness categories driving the organization's lost and restricted work day numbers and b) other practices or conditions that could materially affect the organization's accident and injury rates.

6.5.2.2 ISMS Principles and Commitments Are Addressed in Safety Documents

1) The ES&H Manual and other Laboratory safety documents are to address ISMS principles and commitments.

2) The E&SH Manual describes the approaches the Laboratory uses to implement the ISMS. The ES&H Manual references and implements the WSS set as they relate to specific work and hazards.

3) The Directorate safety and safety-related documents (e.g., IWSs, FSPs, OSPs, Self-assessment Plans, training plans, etc.) are to be based on the ISMS principles and incorporate the applicable requirements of the WSS set, all per the provisions of this Description and the ES&H Manual. The IWS is a new and important addition to the safety documents and needs to be included with an orderly implementation of the ISM and WSS considerations in all of the documents. The IWS is not required for the Superblock activities as described in Section 7.3.

4) For new work activities, the IWS is to be used starting October 1, 1999. New FSPs, OSPs, and other safety-related documents are to include the ISM and WSS considerations also starting October 1, 1999.

5) For existing work activities using the ES&H Manual and applicable approved safety documents (e.g., FSPs and OSPs), IWSs are to be prepared to ensure incorporation of the ISMS requirements by the time of the final ISMS Verification. In the transition, these can use existing approved safety documents in completing the IWS format and obtaining the approval. Existing FSPs, OSPs, and other safety-related documents are to be updated with the ISM and WSS considerations by the next scheduled review or the September 2000 milestone, whichever is earlier.

6.5.3 DOE Guiding Principle 6 - Hazard Controls Tailored to Work Being Performed

Hazard controls are tailored to the project work.

6.5.3.1 Appropriate Sections of the ES&H Manual Are Applied in Tailoring Controls to Specific Work Activities

The individual supervising the work activity is responsible for ensuring tailored controls are developed and implemented for each hazard associated with the facility and work activity consistent with the provisions of Section 7 and the ES&H Manual.

6.6 Work Authorization and Execution

6.6.1 DOE Guiding Principle 7 - Operations Authorization

Operations are authorized before work begins.

6.6.1.1 Work Activities Are Appropriately Reviewed and Authorized Before Starting

1) Work activities are to be reviewed and authorized before the work begins consistent with the provisions of Section 7 and the ES&H Manual.

2) As part of this process, workers are to be provided an opportunity to review and comment on the proposed operating plans and/or procedures.

3) The organization authorizing the work activity is responsible for ensuring an appropriate prestart review is conducted to validate satisfaction of the safety requirements.

4) The scope and rigor of the prestart review will vary based on the characteristics of the work activity. The requirements of the prestart review process are defined in the ES&H Manual.

6.6.1.2 Authorization Agreements

For Category 2 nuclear facilities and as appropriate for certain Category 3 nuclear facilities and other activities involving unusual nuclear hazards, LLNL and DOE mutually may agree to establish authorization agreements for specific facilities and/or activities. The purpose of the authorization agreements is to provide a definitive understanding and documentation structure that includes the Authorization Basis for the facilities and/or activities covered, consistent with Contract 48. An important feature provided is that they contain the necessary specific considerations and determinations required for the particular facilities and/or activities and enable this Description to address the institutional aspects. The agreements provide authorization of these facilities and/or activities when following the processes described in the applicable ISMS Description. The agreements between DOE and the Laboratory identify, as appropriate, the hazards and associated mitigation measures required for authorization of the facilities and/or activities. After a potential need for an authorization agreement has been brought to the Laboratory leadership and addressed, the

cognizant Associate Director and DOE will determine the conferring parties and the terms and conditions of an authorization agreement. To provide for proper maintenance and continued attention, each authorization agreement is to be reviewed annually and be updated and reapproved as necessary by those responsible at the Laboratory and DOE. The specific applications of authorization agreements are defined in Section 7.

6.6.2 DOE Core Function 4 - Perform Work within Controls

6.6.2.1 Work Is Appropriately Controlled

1) Each individual is responsible for adhering to the safety controls established for the work activity and informing their supervisors when controls are believed to be inadequate.

2) The supervisor of the work is responsible for ensuring that the work is performed in accordance with the defined work controls.

6.6.2.2 Applicable Procedures and Governing Documents Are Followed

1) The individual supervising the work is responsible for ensuring that each worker has immediate access to the work activity's governing procedures and safety documents.

2) Steps are taken by the individual supervising the work to ensure that each worker on the activity is knowledgeable concerning the governing procedures and work controls.

3) All work is to be performed in conformance with applicable procedures and governing documents.

6.7 Performance Monitoring and Feedback

6.7.1 DOE Core Function 5 - Provide Feedback and Continuous Improvement

6.7.1.1 Work Activities Are Monitored

1) The individual supervising the work is responsible for monitoring the work activity to ensure that the governing procedures and safety documents are being followed.

2) In the event it is determined that the work activity's limits and/or controls are not being followed, the affected work is to be reevaluated by the organization authorizing the work activity and suspended, if appropriate, until remedial actions are taken.

3) In the event it is determined that the approved Work Activity Authorization or the Facility Operation Authorization per the provisions of Section 7 and the ES&H Manual is exceeded, the affected work and/or facility is to be placed in a safe condition and further work suspended until appropriate remedial actions are taken.

4) Each worker is responsible for bringing to the attention of their immediate supervisor problems with the applicable limits and/or controls and opportunities for improvement associated with the work or governing procedure(s). The supervisor is responsible for the evaluation and appropriate action.

5) Each worker is empowered to stop work if there is an unsafe or unapproved condition. Prompt notification of the immediate supervisor is required. Resumption of work will not proceed until after the condition has been evaluated and the appropriate remedial actions have been taken.

6.7.1.2 Safety Self-Assessment Programs Are Defined

1) The purpose of the Laboratory's safety self-assessment program is to ensure a proactive approach to safety and to improve safety performance. The specific objectives of LLNL's safety self-assessment program are to ensure: a) Laboratory operations comply with applicable safety policies and procedures; b) safety-related requirements are integrated into all levels of facility, management, and operational activities; and c) safety-related deficiencies are identified, analyzed, and managed to minimize their occurrence or recurrence.

2) Each Directorate is to develop and operate a safety self-assessment program consistent with the requirements specified in the ES&H Manual.

3) As an integral part of the safety self-assessment process, each Directorate is to perform an annual evaluation of its implementation of the LLNL ISMS. The evaluation is to include a review of the Directorate Implementation Plan and any succeeding documentation to ensure they remain workable, current, and in conformance with this Description.

6.7.1.3 Processes Are in Place to Measure and Reinforce Safety Requirements and Expectations

1) Establishing safety performance measures is a collective effort by the Laboratory, University of California, and DOE/OAK. The measures to gauge safety system effectiveness are determined through negotiations by multiple teams and managed through the Appendix F processes.

2) The ES&H performance measures process is managed at an institutional level by the ES&H Functional Manager. The ES&H Working Group has a key role in facilitating the ES&H performance measures process and integrating it into the Directorates' safety performance metrics.

3) Each Directorate is responsible for providing required performance measure information. In turn, summary performance measure information is provided back to each Directorate.

4) Performance measure information is accessible to all employees.

5) Each Directorate is responsible for having appropriate metrics to evaluate its safety performance.

6.7.1.4 Processes Are Defined for Analyzing Problems, Identifying Root Causes, and Ensuring Corrective Actions Are Taken

1) Each Directorate is responsible for analyzing, tracking, trending, and correcting safety-related problems and deficiencies associated with its operations and facilities.

2) Each Directorate is to record and track safety-related deficiencies consistent with the provisions and thresholds specified in the ES&H Manual. Each Directorate is responsible for correcting deficiencies from requirements, as described in the ES&H Manual.

3) Each Directorate is responsible for reporting, analyzing, tracking, and correcting safety-related occurrences consistent with the Laboratory's implementing procedure for occurrence reporting.

4) Serious safety-related incidents are to be formally reviewed, addressed, and reported consistent with the provisions of the ES&H Manual. For incidents in nuclear and radiological facilities and activities, the PAAA Office is to be involved, as appropriate.

5) Each Directorate is to use medical surveillance examinations as appropriate to assess impacts of work on employee health.

6) Root cause analyses are to be performed for occurrences, formal incident analyses, and other safety-related issues deemed appropriate by the Directorate.

6.7.1.5 An Annual Independent Assessment of LLNL's ISMS Is Conducted

1) The ARO is responsible for conducting an annual independent assessment of the LLNL ISMS.

2) The ARO is to periodically assess continued conformance of each Directorate Implementation Plan and any succeeding documentation with this Description.

3) The ARO assessment is to include an evaluation of each Directorate's implementation of the LLNL ISMS in accordance with the commitments and plans made in its Directorate Implementation Plan and any succeeding documentation.

6.7.1.6 Lessons Learned Are Effectively Transmitted

1) The Laboratory's Lessons Learned Coordinator gathers information regarding potential Lessons Learned from internal and external sources based on experiences considered relevant to Laboratory operations. Potential Lessons Learned are reviewed with several ES&H organizations within the Laboratory, including members of the ES&H Working Group, before being distributed.

2) Lessons Learned are to be shared to enhance operational safety and facilitate cost effectiveness. Individuals are to be encouraged to submit Lessons Learned.

3) Lessons Learned are to be prepared and distributed whenever there is an opportunity to share a valuable new work practice or warn others of an adverse practice, experience, or product.

4) Lessons Learned are transmitted by the Lessons Learned Coordinator to individuals identified by each Directorate's Assurance Manager. In addition, each Assurance Manager is responsible for ensuring transmission of Lessons Learned to other appropriate personnel.

5) Lessons Learned will be posted on the "LLNL only" website.

6) The organization authorizing work is responsible for ensuring that applicable Lessons Learned maintained on the "LLNL only" website are considered during the process of authorizing work.

7) A review of Lessons Learned maintained on the "LLNL only" website is to be incorporated into each Directorate's self-assessment program to ensure continued utilization of relevant Lessons Learned.

8) Lessons Learned considered of importance to DOE operations outside of LLNL are shared with the greater DOE community through the DOE listserver program and through DOE's website for Lessons Learned.

6.7.1.7 Improvements are to be Incorporated into the ISMS Implementing Documents

Based on the information derived from the various performance monitoring and feedback processes, appropriate improvements are to be incorporated into this Description, the Directorate Implementation Plans and any succeeding documentation, and the ES&H Manual, as appropriate.

6.8 Conclusion

Unique issues and special cases not articulated in the set of core requirements in this Section are to be addressed by the identified management chain and taken to the responsible AD for resolution and then, as necessary, to the DDO.

7. WORK PLANNING AND AUTHORIZATION PROCESS

7.1 Introduction

The objective of the work planning and authorization process is to promote safe operations by ensuring that the hazards associated with facility operations and work activities are clearly understood and appropriately managed. Section 7.2 describes the facility operations and authorization structure and Section 7.3 describes the work activities and authorization structure. Consistent with the graded approach process, the greater the hazards associated with a facility or activity the more rigorous the preparation and authorization process required. The Laboratory has established eight authorization levels for facility operations and six authorization levels for work activities based on specific hazards and thresholds. For each authorization level, formal work control and approval/concurrence requirements have been established to ensure safety is properly and consistently addressed.

The basic relationship and the integration between the Facility Authorization Structure and the Work Activity Authorization Structure are important. They result from how the two structures are constructed and used. A key reason for having the two structures is to fit into the ISM Institution - Facility - Activity process and to have explicit safety processes for both. More importantly, each structure is distinct with its own hierarchy, requirements, and uses. The Facility Authorization Structure is based on the hazards and is used to establish the safety envelope and types of activities that can be conducted in a facility. It defines and documents the content and particulars of activities allowed in that facility. The Work Activity Authorization Structure is based on the control of hazards and is used to define the hazards, establish the controls, and authorize an activity. The basic functional relationship and the integration between the two is that they ensure that a planned activity is done within the safety envelope authorized for a Facility and that clear lines of responsibility are maintained. Consistent with Section 7.3, Facility concurrence is required in authorizing an activity to ensure the planned activity fits within the approved safety envelope and that the collective set of activities being performed in a facility do not exceed its approved safety envelope. When used in combination, the two structures provide a comprehensive and integrated approach to a formalized safety process and enable consistent application across the Laboratory.

7.2 Facility Operations and Authorization Structure

Each facility is subject to an analysis to identify and evaluate the associated hazards and to determine the appropriate facility categorization using the Facility Authorization Structure and Levels described in this section. The structure and levels are directly connected to the types and importance of hazards in them. An FSP, approved by the Facility AD with concurrence from the ES&H Team Leader, is required for each hazard-ranked facility (Facility Authorization Level 2 and above). For facilities with dual categorization, the applicable preparation and authorization

process is that for the higher Facility Authorization Level. A Directorate may elect to use a single FSP to cover multiple facilities. Accelerator, moderate hazard, explosives, and nuclear facilities each require a formal safety assessment or analysis and DOE approval. The process for the development of safety basis documentation for nuclear facilities including a flow diagram and the necessary specifics is in the ES&H Manual. LLNL has no Category 1 nuclear facilities or high hazard facilities. The impacts described are to people or to the environment, or as stated. Table 7.1 summarizes the preparation and authorization process elements for facilities. The Hazard Analysis Mechanism is identified for each level in the form of the document or action required to perform the function. The ES&H Manual contains necessary specifics for the Prestart Reviews at each level as well as other information, definitions, and elaboration.

Facility Authorization Level 1: *General industry facilities*. Facilities with operations involving hazards in activities commonly performed by the public (e.g., office activities) or that have been established by a Facility Screening Report, as described in the ES&H Manual, to have negligible impacts on-site and off-site from non-routine hazards are categorized as general industry. General industry facilities operate according to the provisions of the ES&H Manual. No facility-specific safety documentation is required; however, to have a complete and conscious process, the facility operation authorization is included in the Facility Acceptance for new general industry facilities.

Facility Authorization Level 2: *Low hazard facilities*. Facilities with the potential for minor on-site or negligible off-site impacts are categorized as low hazard. In addition to an FSP, a Hazard Analysis Report (HAR) approved by the Facility AD with concurrence from the ES&H Team Leader is required. The FSP serves as the governing document for the facility operations. The controls in the FSP are to be adequate to ensure the safety envelope and to ensure compatibility of work activities conducted within the facility. A Prestart Review is required prior to the operation of any new low hazard facility.

Facility Authorization Level 3: *Radiological facilities*. LLNL radiological facilities are those facilities where work is conducted using radioactive materials and are categorized as such according to the requirements of DOE-STD-1027-92 (Ref. 17) and because the radioactive material inventory is below Category 3 levels. Radiological facilities do not have the potential to cause significant localized consequences. This is as established in the required HAR along with an evaluation of any on-site or off-site impacts. Prepared in addition to the FSP, the HAR is approved by the Facility AD with concurrence from the ES&H Team Leader. The controls in the FSP are adequate to perform operations in the facility safely and are consistent with conditions analyzed in the HAR. A Prestart Review is required prior to the operation of any new LLNL-designated radiological facility.

Table 7.1: Facility Authorization Structure.

Hazard Level/ Facility Category	Hazard Analysis Mechanism	Controlling Documentation	Facility Operation Authorization			
			Facility Authorization Level	Approval	Concurrence	Type of Prestart Review
General Industry	Facility Screening Report	ES&H Manual	1	Facility AD (a)	ES&H Team Leader (a)	Facility Acceptance
Low hazard	Hazard Analysis Report (HAR)	Facility Safety Plan (FSP)	2	Facility AD	ES&H Team Leader	Prestart Review
Radiological	HAR	FSP	3	Facility AD	ES&H Team Leader	Prestart Review
Accelerator	Formal Safety Assessment	Safety Assessment Document (SAD) & FSP (b)	4	Facility AD & DOE	Haz. Control Dept. Head	Accelerator Readiness Assessment
Moderate Hazard	Formal Safety Analysis	Safety Analysis Report (SAR) & FSP (b)	5	Facility AD & DOE	DDO	Readiness Assessment
Explosives	Formal Safety Analysis	SAR & FSP (b)	6	Facility AD & DOE	DDO	Readiness Assessment
Nuclear Hazard Category 3	Formal Safety Analysis	SAR & Technical Safety Requirements (TSRs) & Authorization Agreement, as applicable & FSP (b)	7	Facility AD & DOE	DDO	Operational Readiness Review (ORR) (c)
Nuclear Hazard Category 2	Formal Safety Analysis	SAR, TSRs & Authorization Agreement & FSP (b)	8	Facility AD & DOE	DDO	ORR (c)

Notes: (a) Included in the Facility Acceptance.
(b) FSP approval is by the Facility AD with concurrence of the ES&H Team Leader.
(c) A restart is done as described in the ES&H Manual.

Facility Authorization Level 4: *Accelerator facilities*. For facilities having accelerators capable of 10 MeV or greater, in addition to an FSP, an accelerator-specific Safety Assessment Document (SAD) is prepared, concurred upon by the HCD Head, and approved by the Facility AD and DOE. The SAD establishes the agreed-upon safety envelope for the accelerator facility within which the safety procedures must fit. The controls defined in the facility's governing documents are to be adequate to ensure the safety envelope and compatibility of the work activities conducted under the auspices of the SAD. An Accelerator Readiness Assessment is required prior to the operation of any new accelerator facility.

Facility Authorization Level 5: *Moderate hazard facilities*. Facilities with considerable potential for on-site impact, but at most only minor off-site impact, are categorized as moderate hazard. In addition to an FSP, a facility-specific Safety Analysis Report (SAR) is prepared, concurred upon by the DDO, and approved by the Facility AD and DOE for each moderate hazard facility. The SAR establishes the agreed-upon safety envelope within which the FSP and any OSPs must fit. The controls defined in the facility's governing documents are to be adequate to ensure the facility safety envelope and compatibility of work activities conducted under the auspices of the SAR. A Readiness Assessment is required prior to the operation of any new moderate hazard facility.

Facility Authorization Level 6: *Explosives facilities.* An explosives facility is defined as a facility whose main purpose is to store or perform work with explosive materials in quantities that could impact more than the people in the explosives work area. In addition to an FSP, a facility-specific SAR is prepared, concurred upon by the DDO, and approved by the Facility AD and DOE for each explosives facility. The SAR establishes the agreed-upon safety envelope within which the FSP and any OSPs must fit. The controls defined in the facility's governing documents are to be adequate to ensure the facility safety envelope and compatibility of work activities conducted under the auspices of the SAR. A Readiness Assessment is required prior to the operation of any new explosives facility.

Facility Authorization Level 7: *Category 3 nuclear facilities.* Nuclear facilities are categorized according to the requirements of DOE-STD-1027-92, based on radioactive material inventory and radiological activities. Each Category 3 nuclear facility requires the preparation of a SAR and Technical Safety Requirements (TSRs) in addition to the FSP. The SAR and TSRs establish the agreed-upon safety envelope within which the FSP and any OSPs must fit. These documents define sufficient processes, controls, and limits to ensure that the facility is operated safely and in conformance with all applicable requirements. With the concurrence of the DDO, the Facility AD and DOE approve the SAR, TSRs, and any necessary authorization agreement. An Operational Readiness Review is required prior to the operation of any new Category 3 nuclear facility and restarts are done as described in the ES&H Manual.

Facility Authorization Level 8: *Category 2 nuclear facilities.* Nuclear facilities are categorized according to the requirements of DOE-STD-1027-92, based on radioactive material inventory and radiological activities. A Category 2 nuclear facility requires the preparation of a SAR, TSRs, and an authorization agreement in addition to the FSP. The SAR, TSRs, and authorization agreement establish the agreed-upon safety envelope within which the FSP and any OSPs must fit. These documents define sufficient processes, controls, and limits to ensure that the facility is operated safely and in conformance with all applicable requirements. With the concurrence of the DDO, the Facility AD and DOE approve the SAR, TSRs, and authorization agreement. An Operational Readiness Review is required prior to the operation of any new Category 2 nuclear facility and restarts are done as described in the ES&H Manual.

In no instance may an FSP or OSP extend operations beyond those authorized by a SAR or SAD. Such cases require that the revision process for the SAR or SAD be followed. Depending on the Facility Authorization Level, the revision process starts with the preparation of an Unreviewed Safety Issue (USI), or Unreviewed Safety Question (USQ).

In this structure, the use of authorization agreements is being done consistent with guidance in DNFSB/TECH-19 (Ref. 18), where use is cited for "high-hazard facilities" (Category 1 and 2 nuclear facilities) and the pertinent considerations and expectations are presented. A determination was made to have authorization agreements for all of the Superblock facilities, even though only one is a Category 2 nuclear facility and the other two are Category 3 nuclear facilities. This is because of their interrelationships and inclusion in the Superblock Description. Authorization agreements may constructively serve in applications to certain facilities and/or activities, as described in Section 6.6.1.2. In the situations where authorization agreements are determined to be necessary, the process established for each one will address the required particulars and documentation.

7.3 Work Activities and Authorization Structure

All work activities have to include attention to safety and use of the ISMS in order to address and improve the overall safety performance at LLNL. This can be accomplished be using the Work Activity Authorization Structure and Levels described in this section. The structure and levels are connected to the hazards through the degree of understanding of the hazards and controls and the documentation that exists or is required for work activity authorization. This approach provides a single process for addressing the variety of hazards at LLNL. In each level, there is a range of hazards that are addressed by the type of controls and documentation cited. Appropriately incorporated are the facility requirements as provided by the FSP, where applicable, and the FPOC. When a work activity is beyond those commonly performed by the public, preparation of an Integration Work Sheet (IWS) is required (Work Authorization Level 2 and above) as described in Section 6.4.1.2. For the Superblock activities, the function of the IWS is served by a separate ISMS process with documentation of equivalent intent and content as

determined and maintained by the responsible Directorate, and so the IWS is not required for these. The IWS process is designed to ensure front-end identification and understanding of an activity's hazards and facilitate the development and implementation of tailored controls. A single IWS may be used to cover multiple activities of a similar nature. The IWS ensures a conscious formal process where there is no self-authorization. Project participants and, as appropriate, ES&H professionals and Subject Matter Experts are involved in the preparation and authorization process to help ensure attainment of the ISM objectives. For certain situations, "Work Permits" are necessary as described in the ES&H Manual. Table 7.2 summarizes the preparation and authorization process elements for work activities. The Hazard Analysis Mechanism is identified for each level in the form of the people required to perform the function. The ES&H Manual contains necessary specifics for the Prestart Reviews at each level as well as other information, definitions, and elaboration.

Work Authorization Level 1: *Commonly performed by the public*. Such work activities are designated as Level 1. They may proceed at the responsible individual's (RI) discretion in accordance with generally accepted practices and applicable LLNL safety requirements. Depending on the work assignment, the RI is the Principal Investigator, lead person, or the worker. No activity-specific documentation is required. The RI's supervisor is responsible for being cognizant of the RI's work activities.

Work Authorization Level 2: *Standard controls with review*. Work activities just beyond those commonly performed by the public and governed by existing safety documents are designated as Level 2. Such activities require an IWS to ensure proper planning, authorization, and documentation. Appropriate work controls are defined by references to the ES&H Manual, other applicable existing safety documents, and the FSP, again as applicable. Required approval is by the identified Project Leader, with concurrence of the FPOC and the ES&H Team Leader, upon confirmation of controls. The concurrence of the ES&H Team Leader is necessary until the revision process of incorporating the WSS set into the ES&H Manual is complete.

Work Authorization Level 3: *Supplemental controls (non-mandatory)*. In certain instances, management may elect to supplement the IWS and references to existing safety documents and the FSP, as applicable, with additional activity-specific safety documentation. In such cases, a Level C OSP is prepared or other safety documentation is used. Typically, a Level C OSP is prepared to ensure an added measure of visibility and/or review for an activity. Preparation and use of a Level C OSP or other safety documentation is always optional, but once finalized it is to be used. Required approval is by the identified Project Leader, with concurrence of the FPOC and the ES&H Team Leader, upon confirmation of controls.

Table 7.2: Work Activity Authorization Structure.

Work Activity Category	Hazard Analysis Mechanism	Controlling Documentation	Work Activity Authorization			
			Work Authorization Level	Approval	Concurrence	Type of Prestart Review
Commonly performed by the public	Responsible Individual (RI)	ES&H Manual	1	Responsible Individual (RI)	Supervisor (implied)	Informal confirmation of controls (undocumented)
Not commonly performed by the public; IWS preparation required: Standard controls with review	RI, FacilityPoint of Contact (FPOC) & ES&H Team	IWS (a) & FSP (b)	2	Project Leader	FPOC & ES&H Team Leader (c)	Confirmation of controls
Not commonly performed by the public; IWS preparation required: Supplemental controls (non-mandatory)	RI, FPOC, & ES&H Team	IWS (a), FSP (b), & Level C OSP or other optional safety documentation	3	Project Leader	FPOC & ES&H Team Leader	Confirmation of controls
Not commonly performed by the public; IWS preparation required: Supplemental controls	Project Team, FPOC, & ES&H Team	IWS (a), FSP (b), & Level B OSP	4	Program Leader	FPOC & ES&H Team Leader	Prestart Review
Not commonly performed by the public; IWS preparation required: Off-site activity	Project Team & ES&H Team	IWS (a) & Level B Off-site OSP (d) or IWS (a)	5	Program AD	ES&H Team Leader	Prestart Review
Not commonly performed by the public; IWS preparation required: Standards review required (e)	Project Team, FPOC, & ES&H Team	IWS (a), FSP (b), & Level A OSP	6	Program AD	ES&H Team Leader & Facility AD ; DDO & DOE as appropriate (f)	Confirmation of controls or higher (g)

Notes: (a) References ES&H Manual and other applicable existing safety documents (e.g., Engineering Safety Notes, Permits, etc.), as appropriate.
(b) Applicable for a hazard-ranked facility (Facility Authorization Level 2 and above).
(c) ES&H Team Leader concurrence is necessary until the revision process of incorporating the WSS set into the ES&H Manual is complete.
(d) Used where LLNL has management responsibility, the OSP supplements and/or references governing safety documentation applicable at the work site.
(e) Proposed work activity would deviate from requirements in Contract 48 or the ES&H Manual.
(f) DDO and DOE concurrence for exemptions will be obtained as described in the ES&H Manual.
(g) Type of prestart review depends on hazard comparability with those in Work Authorization Levels 2 through 5.

Work Authorization Level 4: *Supplemental controls*. A Level B OSP is required to be prepared when: a) required by provisions of the ES&H Manual; b) a work activity entails hazards not covered in the applicable FSP; c) the necessary controls for a work activity are beyond those defined in the applicable FSP; d) a work activity is beyond those commonly performed by the public and not covered by an FSP or direct reference to provisions of the ES&H Manual; or e) mandated by management. Approval is by the Program Leader with concurrence of the FPOC and the ES&H Team Leader, and a Prestart Review is required.

Work Authorization Level 5: *Off-site activity*. Preparation of a Level B Off-site OSP is required when a work activity is beyond those commonly performed by the public and for which LLNL has management responsibility at a location other than the Livermore main site, Site 300, or NTS. Similarly, for a work activity where LLNL does not have off-site management responsibility, the IWS is to be used to ensure proper attention to the requisite safety conditions and host facility's requirements and take appropriate actions to address any hazards. Approval is by the Program AD with concurrence of the ES&H Team Leader, and a Prestart Review is required.

Work Authorization Level 6: *Standards review required*. Preparation of a Level A OSP is required when a proposed work activity would deviate from requirements in Contract 48 or the ES&H Manual. Approval is by the Program AD with concurrence of the ES&H Team Leader and Facility AD. As appropriate, a DDO and DOE concurrence for exemptions will be obtained as described in the ES&H Manual before work can begin. The type of prestart review depends on the determined hazard comparability with those in Work Authorization Levels 2 through 5.

8. INTEGRATION

8.1 Introduction

Integration of program and safety planning from the Director down to the individual workers is accomplished in a manner attentive to the Institution - Facility - Activity process using this Description and the Directorate Implementation Plans. Basic to the integration and the operations at the Laboratory is the ES&H Manual and the incorporation of the ISMS fundamentals into it. The Superblock ISMS has been addressed and is being reconciled in a timely manner as described in other sections. The intended goal is to have a single LLNL ISMS structure. The appropriate specific plans with tasks, schedules, and milestones are available for these documents.

Worker involvement is an essential part of ISM; therefore, an important integration direction is the formalized upward involvement and connection from the workers in all of the functions and assignments. This integration needs to be operative upward through the Institutional, Facility, and Activity processes as well as from the top down as mainly contained in this Description. The Laboratory and the Directorates must encourage, use, and recognize the suggestions, ideas, and efforts from the workers. Similarly, because of the LLNL mixed matrix organizational structure, the integration(s) across Directorates and their Program, Payroll, Facility, and Services operational functions must also be addressed. These are addressed from the institutional perspective in this Description. The necessary specifics for all directions of integration are contained in the Directorate Implementation Plans. The important management chains are also addressed in this Section.

To help facilitate the incorporation of ISMS at LLNL and in recognition of the increased formalization, an action has been taken to organize the existing ES&H documents into a formal structure. The name for this consolidation is the ES&H Manual and it is comprised of six volumes. In support of this document structure is a set of Controlling Principles for the ES&H Manual that provides the basic requirements for the use, maintenance, and availability of the ES&H Manual.

Communications and training are critical components in the integration of the ISMS at LLNL. These need to be done at the Institutional and Directorate levels and reach all in the LLNL workforce. They have been started and will continue in an organized, structured process as the ISM implementation proceeds.

8.2 Directorate Implementation Plans

In order to establish the flow down of ISMS requirements from institutional requirements to the working level, each Directorate has an ISMS implementation plan that satisfies the requirements

specified in this Description. Separate Directorate Implementation Plans are appropriate because each Directorate has unique programmatic missions with different types of facilities, technical work, and hazards.

Directorate Implementation Plans reference specific implementing provisions for each of the core requirements established in this Description. When uniform practices are mandated each Directorate references the specified implementing provisions. Directorate Implementation Plans define the organization's document hierarchy and the safety roles, responsibilities, and authorities for each position-level within the organization. Directorate Implementation Plans are subject to institutional review to assure that the requirements established in this Description are satisfied . The Directorate Implementation Plan may be the chosen continuing operating document or it may be the transition document and so appropriate succeeding documentation may be necessary. For this Description, the term Directorate Implementation Plan is used to include any succeeding documentation. Such is specifically noted or added in particular sections for completeness and emphasis.

Each Directorate Implementation Plan starts with the following standardized statements to express the recognition, understanding, and acceptance of ISMS, along with a commitment to ISMS and the LLNL ISMS Description for all of the operations and activities in their Directorate.

1) The Directorate recognizes and understands the DOE/UC contract requirement for ISMS at LLNL and the opportunities and values of it.

2) The Directorate accepts the DOE ISM Objective, Guiding Principles, and Core Functions and the Institutional requirements contained in the LLNL ISMS Description.

3) The Directorate is committed to implementing and utilizing ISMS in all of its programs, operations, facilities, and activities and to continue its use.

The Directorate Implementation Plans are the means by which the LLNL mixed matrix organizational structure is able to describe their particular organizational structures, operations, facilities, and activities, and the hazards involved and how they address the safety aspects of these in the context of Contract 48 and ISMS. They provide the necessary self-determination and focus for the individual responsibilities involved. These plans address the particular standards used for the special hazards in their Directorates. Critical considerations in these plans are the "tailoring commensurate with the hazards" so it can be shown that the many Contract 48 and ISMS requirements are met. They also address the necessary major Delegation/Acceptance Agreements that are necessary for the Program and the applicable Payroll, Facility, and Services support parts of each Directorate. Another facet of flow down contained in the Directorate Implementation Plans is the demonstration of the connections into the Institutional documents and the continued

recognition and utilization of them. For this, the requirements matrix connecting the core requirements in the Description to the ES&H Manual and into the Directorate documentation has continuing value and should be maintained in any succeeding documentation.

Each of the Directorate Implementation Plans is signed by the responsible Associate Director and has undergone a formal institutional review and approval process to assure compliance, completeness, and consistency with the details in Contract 48 and the LLNL ISMS Description. This review was conducted by a small group of senior Laboratory personnel with a senior DOE/OAK observer. Each Directorate Implementation Plan was presented by the respective Associate Director supported by up to two of the Directorate principals. A focus was on the current and near term operations, activities, and the hazards involved. If any were found to be unsatisfactory or needing improvements or updates, then they were to be redone to meet the DOE and LLNL requirements and then be re-reviewed. The review process was successfully completed and each Directorate Implementation Plan is approved by the Director.

Each Associate Director is responsible for the maintenance and configuration control of their Directorate's ISMS implementation documents. For substantive changes or responding to a new version of this Description, the Directorate Implementation Plans and/or any succeeding documentation are to be realigned accordingly through an update or by using crosswalks or other appropriate mechanisms. To ensure the maintenance and configuration control, an institutional review of the changes is to be done by a DDO appointed senior group. Upon completion of this review, the group is to advise the responsible Associate Director and the DDO of any adjustments to achieve proper alignment with this Description and make a recommendation respecting approval.

8.3 ES&H Manual

In the increased formalization being brought about by the incorporation of ISM, there is considerable value in collecting and organizing the ES&H documents into a formal structure. This has been done by establishing an ES&H document structure called the ES&H Manual. Included in this new manual are the contents of the former principal ES&H document at LLNL, the Health and Safety Manual. This long established and maintained document applied across the Laboratory to all operations and activities. It was structured to address all of the topics needed at the Laboratory and was attentive to Federal Regulations, DOE orders, and the current technical capabilities. Also included are the contents of the former second principal ES&H document at LLNL, the Environmental Compliance Manual, which addressed federal, state, and local governmental regulations. Accompanying these in the ES&H Manual, are specialty manuals such as the Training Program Manual and the Quality Assurance Program. To accomplish the purpose of the ES&H Manual to have the necessary ES&H documents for LLNL activities in one structure, criteria for the specific inclusion or exclusion of candidate ES&H documents is to be included in the ES&H Manual itself.

The requirements in the ES&H Manual are based on the WSS set identified for the specific work and associated hazards (see Section 10 for the description of the WSS set) and LLNL best practices that have been determined to be requirements. The ES&H Manual also describes the implementation of the ES&H management commitments made in this Description.

The ES&H Manual consists of six volumes. In these:

Volume I, ES&H Management, contains Chapter 1 (Laboratory and ES&H Policies, General Worker Responsibilities, and Integrated Safety Management) and Chapter 2 (Managing ES&H for LLNL Work) from the Health and Safety Manual. The first of these two chapters describes the general responsibilities of LLNL management and workers, subcontractors, and federal and local agencies with regard to work conducted at the Laboratory. The second describes how work is to be performed based on the LLNL ISMS.

Volume II, Health and Safety--Hazards and Controls, contains the majority of the chapters and supplements that previously made up the Health and Safety Manual. The others have been moved to other volumes where they more logically fit within the new organization of the manual. Volume II contains both general and specific requirements for Laboratory work activities including specific responsibilities for those work activities.

Volume III, Environment--Hazards and Controls, contains documents with controls designed to protect the environment and includes a majority of the Environmental Compliance Manual and its guidance documents.

Volume IV, Other Institutional ES&H Documents, contains LLNL ES&H-related documents such as the Quality Assurance Program, the Training Program Manual, Occupational Medical Program, and Environment, Safety, & Health Education.

Volume V, Nuclear Facility Requirements, contains documents specific to nuclear facilities and related activities, including several chapters and supplements from the Health & Safety Manual.

Volume VI, Nevada Requirements, contains documents providing for the special LLNL activities in the DOE/NV operations at NTS and elsewhere.

Additional volumes may be added to the ES&H Manual to provide for specific activities, as was done in Volumes V and VI. The generation of such a new volume is the responsibility of the Directorate(s) needing it with the approval, use, and continuation support all subject to the Controlling Principles for the ES&H Manual presented below.

The Controlling Principles for the ES&H Manual that follow provide the basic requirements for the use, maintenance, and availability of the ES&H Manual.

- LLNL works according to the ES&H Manual that either contains specific requirements or points to more specific documents and standards containing the requirements applicable at LLNL. The ES&H Manual is the responsibility of the DDO.

- The ES&H Manual is developed and maintained by the Laboratory Site Manager through the Subject Matter Experts and DDO appointed committees such as the ES&H Working Group, the Training Program Committee, and the Hazardous Material Packaging and Transportation Safety Committee. It is approved by the DDO. A check and balance system exists where items disapproved in the process can be taken to the Laboratory Site Manager and the Council on Strategic Operations and then to the DDO.

- The use of the ES&H Manual is supplemented by Subject Matter Experts and the ES&H Teams, who assist in the interpretation and implementation of the applicable requirements. The Laboratory Site Manager is responsible for maintaining both the Subject Matter Experts and the ES&H Teams for all of the broadly applicable topics.

- The Associate Directors are responsible for ensuring Subject Matter Experts are available for any hazards unique to their operations. Similarly, they provide the specialty manuals for their unique operations and activities, like the Fire Protection Program Manual.

- LLNL will update the ES&H Manual on an on-going basis through the Subject Matter Experts and the DDO appointed committees to ensure incorporation of requirements in the WSS set in Contract 48.

- LLNL addresses the technical accuracy, efficacy, and completeness of the ES&H Manual on a continuing basis. The review schedule for the ES&H Manual is developed and maintained by the Document Manager with inputs from the Subject Matter Experts and DDO appointed committees.

- The electronic copy of the ES&H Manual, available through LLNL website, is considered the official copy. All users are required to ensure they are working from the official copy. In addition, hardcopy sets of the ES&H Manual can be printed from the website and are available for reference in the LLNL Library to all managers, supervisors, and workers.

- LLNL collects, considers, and acts on ES&H Lessons Learned. The ES&H Working Group coordinates this effort with the LLNL Lessons Learned Coordinator and addresses Lessons Learned that can be used to improve the ES&H Manual.

- Any exceptions to the requirements in the WSS set will be addressed in a formal and conscious process commensurate with the hazards involved, as described in the ES&H

Manual with any fundamental changes that result to be addressed accordingly in the ES&H Manual.

- The ES&H Manual is maintained under a Configuration Management process by the Document Manager to ensure that control is maintained during the development, revision, and communication of requirements from the WSS set to the end users.

With these basic requirements, the Laboratory Site Manager, the Subject Matter Experts, and the DDO appointed committees will continue to conduct the necessary multi-faceted and detailed process to incorporate ISM and the WSS set into the ES&H Manual. The incorporation process used for the WSS set is described in Section 12, Flow Down of Requirements.

8.4 Management Chain

The important management chain for each work activity from the worker and the first level supervisor up through the responsible Associate Director or equivalent is defined in Section 6.2.3.2. Included there is a description and a basic framework of the operational functions, which provide an extension and clarification of the overall structure for the LLNL mixed matrix organization. With these, a management chain exists for all LLNL operations so that the ES&H responsibility accompanies the funding. During the initial development of the Description, the nominal and special case scenarios were demonstrated and these were tested and refined into operational cases as the Directorate Implementation Plans were prepared and reviewed.

To assist in understanding the way a management chain operates at LLNL; four operational cases are presented. They are described here as the Direct Program, Matrixed Employees, Delegated Program, and Multiprogram and Institutional Services Operational Cases. These are presented in Figures 8.1 through 8.4, with each management chain shown on the basic framework accompanied by the pertinent explanation points. These represent the most common operational cases. Representative position titles are shown and different Directorates might use different ones in their organizational structures. The Facility Operational Case is essentially the same as the Multiprogram and Institutional Services Operational Case.

In the LLNL mixed matrix organization, there are two other operating and necessary, but subordinate, function lines involved in most all of the operations. These are the Payroll and the Facility Lines with their own respective administrative, vocational, and facility functions and responsibilities. The reason for these is that all LLNL employees are in a Payroll organization, work in a Facility or equivalent, and have to be funded by the Programs. The basic framework helps identify and distinguish the different roles. The ADs each have multiple operational functions, so there are many activities where the Program, Payroll, and Facility roles are combined in the same AD and many where they are not. The Services Line is also necessary and yet involved in different ways with some Programs having heavy use and others only occasional

use depending on their needs. Services provide resource and efficiency opportunities for the Directorates and Laboratory and can include user facilities and similar situations. These are all shown in more detail in Figures 8.1 through 8.4.

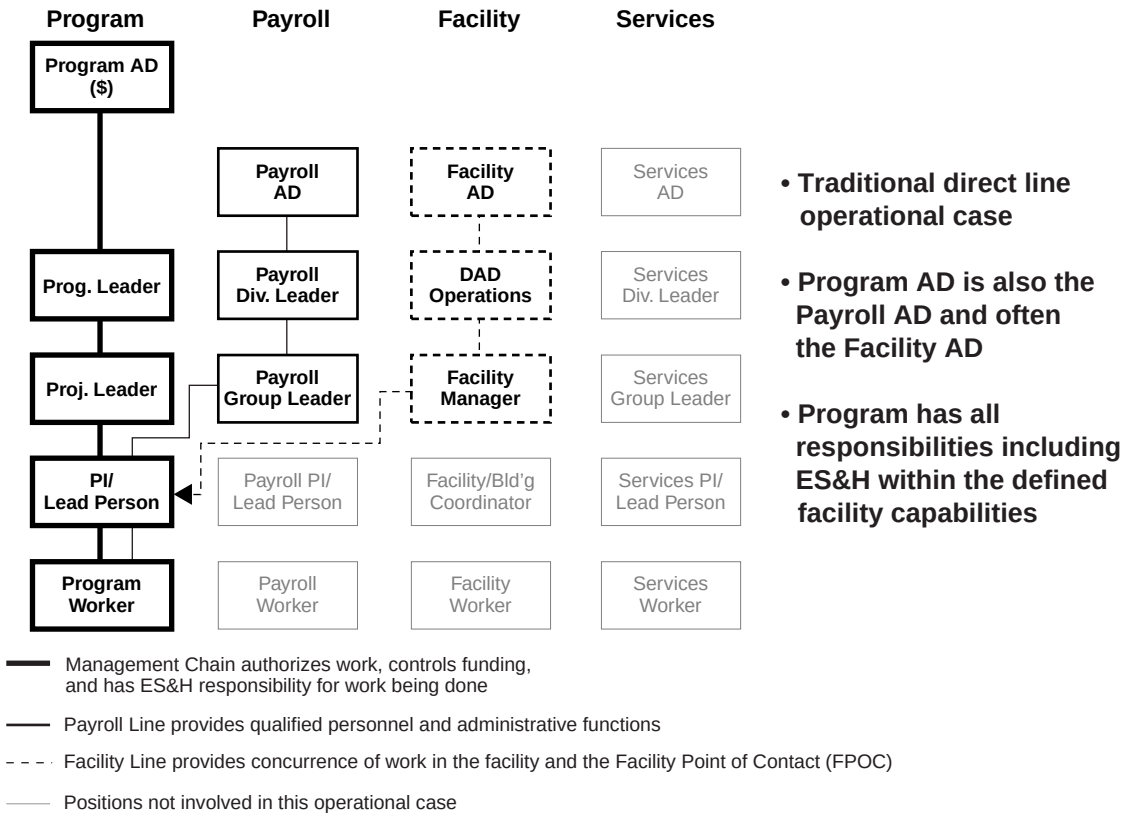

Figure 8.1: Direct Program Operational Case.

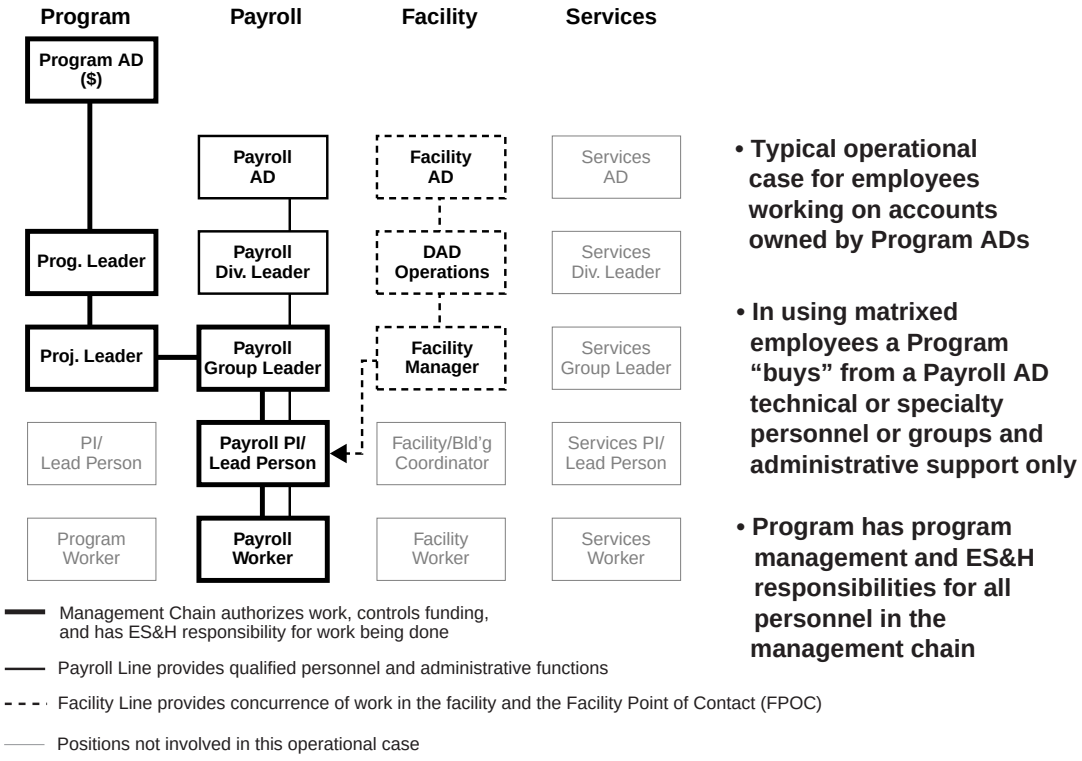

Figure 8.2: Matrixed Employees Operational Case.

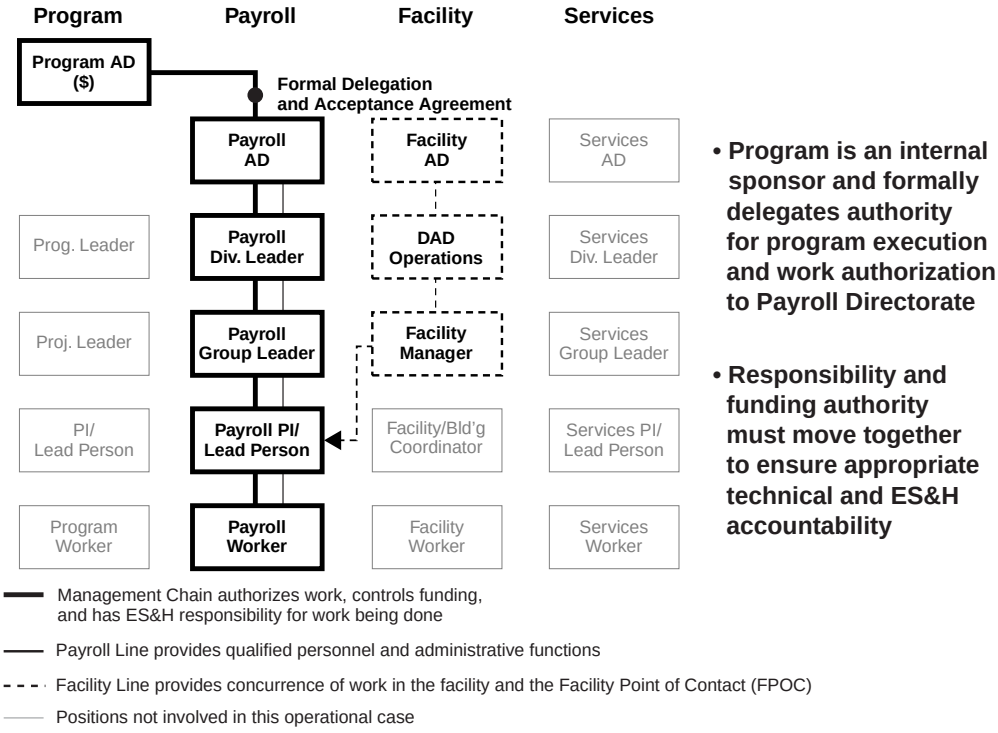

Figure 8.3: Delegated Program Operational Case.

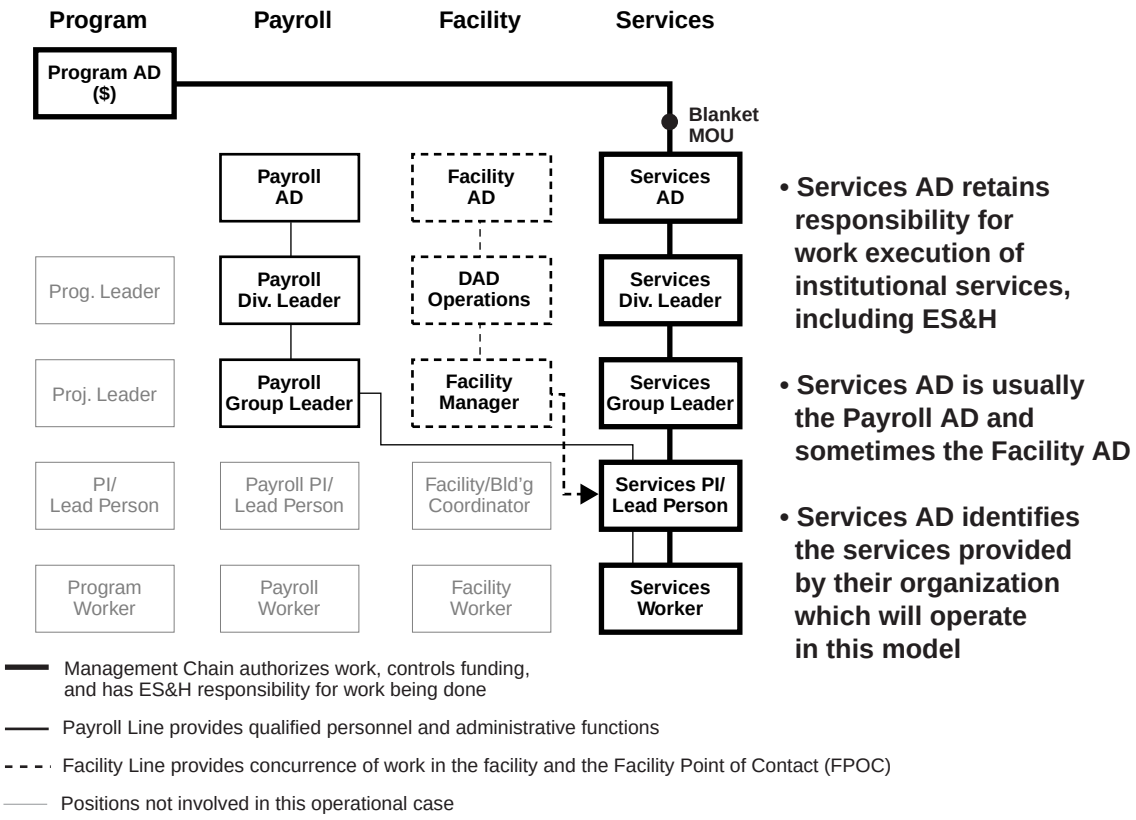

Figure 8.4: Multiprogram and Institutional Services Operational Case.

8.5 Integration Across the Laboratory

Another important element of safety integration is the horizontal integration across the Directorates and the organizations within them. The horizontal integration is especially critical in achieving consistency in the implementation and use of ISM in all of the LLNL activities. It is also useful in the relationships with the other DOE organizations and particularly where they are working together as is done at NTS.

At LLNL there are many mechanisms where horizontal integration operates. It starts with the Director, the Deputy Directors, and the ADs and is achieved at their meetings and in their interactions together and individually. Next is the Senior Management Meeting (SMM) which includes the Director, Deputies, and ADs and other top management individuals with broad institutional responsibilities. Most of the ISMS development status and implementation actions have been brought first to the SMM for their information, comment, and action. Among the Director's Councils, the CSO under the DDO with selected ADs and other high level managers is an important contributor to the horizontal integration of ISM. The CSO is the group that evaluated, discussed, and agreed with the core requirements in Section 6.

The DDO Appointed Committees and especially the ES&H Working Group provide the critical function of horizontal integration. The established processes for these committees and in the case of the ES&H Working Group, the use of an Executive Committee and special subject area sub-committees are particularly valuable in addressing the institution-wide issues, actions, and needs. The electronic communications and interactions provide further value. The Laboratory-wide Ad Hoc groups under the DDO like the Safety Improvement Task Force with a senior member from each Directorate and which was responsible for the development of this Description are additional mechanisms used at the Laboratory for the horizontal integration.

This Description, and more so the ES&H Manual itself, as well as the other existing ES&H documents are major factors in horizontal integration. The availability of these on the LLNL website as well as the growing number of computer aids for filling out forms, making evaluations, and reporting greatly increases the horizontal integration and the attendant values. Other entities across the Laboratory that contribute to horizontal integration include the ES&H Team Leaders and Deputies and their meetings and interactions, the P&M connections with the Technical Release Representatives, and within the Directorates like Engineering and CMS with structures providing support to many parts of the Laboratory. The regular meetings of the senior managers are commonly used for the ES&H topics and again are important in the horizontal integration.

Horizontal integration is greatly assisted by the Communications and Training addressed in the next section. The Laboratory-wide communications program and the institutional training courses help ensure the ISM messages are consistent and clear.

8.6 Communications and Training

The implementation and transition to an effective ISMS at LLNL requires a comprehensive, multi-media communications program with training being a key component. The core requirements for ISMS training are defined in Section 6.2.4.3. The communications program for 2000 reinforces the information presented during 1999, which focused on ISMS concepts and Laboratory ES&H messages.

The rollout and initial training of employees had the following objectives:

- Convince employees LLNL has a safety performance problem.
- Make employees aware of ISM and place it in the broad context of workplace safety.
- Raise overall safety-consciousness at LLNL.
- Demonstrate management leadership and commitment to improving the Laboratory's ES&H environment.
- Set the stage for changing the LLNL safety culture.

The rollout effort started with a briefing of Associate Directors by the DDO. The briefing outlined the institutional goals for ISM, responsibilities of associate directors, and a timeline based on having ISM in place by Secretary Richardson's September 2000 milestone.

ISMS had been introduced to managers, supervisors, and employees during 1998, but a stepped-up communications program started after the AD briefing. The goal was to raise employee awareness of ISM, explain the Laboratory rollout program, and prepare employees for their upcoming involvement. Steps taken to accomplish this included the following: publishing news articles about ISM in *Newsline,* observing National Safety Month with banners, posters, and a series of *Newsline* features, highlighting the ISM five core functions on the cover of the 1999/2000 Lab phone book, and mailing a flier to employees introducing the on-line version of the ES&H Manual. During this same time period, the DDO launched the ISM training effort.

Training started with managers, supervisors, and ES&H Subject Matter Experts. Following this, ADs delivered ISM training to their employees and more than 95 percent of employees were trained by September 30, 1999. Directorate-led training included the following: 1) Institutional core training segmented from the management training, an ISM orientation video, and a report on a safety bench-marking study conducted by the Laboratory; 2) ISM training specific to the individual Directorates. The bench-mark report was a key element of the training because it demonstrated that the Laboratory's safety record was not as good as many employees thought.

By the time ISMS implementation is completed, the ISMS training will be incorporated into the existing training structure. This will assure that new employees are trained and that those moving from one Directorate to another will receive specific training as appropriate.

While Directorate training was being conducted, preparations proceeded for the formal Verification. Communications to employees explained the Verification process and tracked progress on ISMS implementation. With the completion of the Initial Institutional Verification in December 1999, the communications continue and are focused on the full implementation in the Laboratory.

Communications also have the longer-term goal of helping to change the Laboratory's safety culture. The strategy behind long-term communications and training is to position the concept of "workplace safety" alongside those of "technical excellence" and "quality work" in everyday Laboratory life. This is being done by placing the subject of safety and key safety messages in front of employees frequently, using a variety of media, and by involving employees in identifying and solving safety problems.

Safety communications, including training, will be a continuing effort at LLNL though tone and emphasis on specific topics will change depending on current issues, employee input, and program actions. Integral to the program will be management leadership, personalized messages,

continuity of effort, consistency of discussion, and capitalizing on employee values – people's pride in the organization, their loyalty, and dedication to excellent work.

The steady flow of communications is designed to keep from overwhelming employees with too many safety and related messages at once. The sustained effort will create the expectation that safety is part of everyday work discussions. These discussions will be enlivened by new topics presented periodically and revisiting others as needed.

Many different communication tools and approaches are being used to engage employees at all levels. Planning includes campaigns to promote specific topics (ergonomics, doing science safely, office safety, preventing repetitive motion injuries), expanded development and communication of Lessons Learned, promotion of the on-line ES&H Manual, communications guidance for supervisors, computer-based information sources, and special events. Feedback mechanisms will be used to determine, among other things, how well safety messages are getting through and if they are understood.

A continued communications and training program is critical to implementation of ISMS and achieving Secretary Richardson's September 2000 milestone. For the ISMS implementation, LLNL has proceeded to develop, update, and follow a paced, multi-media communications program. Program actions are presented in Attachment II in Section 19. Separate, more detailed planning is done in a continuing process to address specific issues or particular sectors of the Laboratory.

The ISMS communications program activities contained in Attachment II are subject to repeated changes for a spectrum of reasons. These activities can be better updated having been placed outside of the formal Change Control Process for the Description. Using the Description Version and the change date will help ensure a proper status marker for Attachment II as changes are incorporated. Even though communications program specifics will change, they are included in this Description to provide the main perspectives on the ISMS and its implementation in a single document.

9. PROGRAM AND BUDGET EXECUTION GUIDANCE

9.1 Internal Process

Laboratory management is responsible for planning work and for ensuring that ISMS requirements for safe work are incorporated into all activities and addressed in the prioritization and allocation of resources. ES&H is a primary consideration in planning and executing all work activities. There are five primary ways ES&H and related functions are funded at LLNL:

1) General and Administrative (G&A) for institutional activities

2) "Other" distributed (per unit) charges including Organizational Facility Charges

3) Service Centers that are institutionally approved and recharged to users

4) Direct programmatic funds

5) Capital projects including Line Item, General Plant Projects, and Capital Equipment

Annually, G&A budget requests for institutional ES&H functions are prepared by the cognizant institutional support organizations. These requests cover institutional ES&H activities such as radiation exposure dosimetry, ES&H standards and policies, monitoring, and site-wide environmental permitting. A risk-based prioritization model is used by the ES&H organizations in LSO (HCD, EPD, and HSD) to aid in prioritization. The Department Heads review the prioritized activities with their respective management teams and then present them to the Laboratory Site Manager. After review of all of the LSO budgets, adjustments are made to balance the impacts. Then the budgets meeting target guidance are submitted to the Budget Office. Funds for activities unable to be accommodated within target budgets are directly requested from the DDO. All proposed budgets and increments are presented to and reviewed by the DDO.

"Other" distributed charges include Organizational Personnel Charge (OPC) for personnel management costs, Program Management Charge (PMC) for program management costs, and Organizational Facility Charge (OFC) for facility management costs. The OFC budgets include ES&H costs related to operation of the facility. Costs are distributed to users based on square footage occupied. The facility manager usually develops the budget, which typically includes ES&H costs such as Assurance Manager costs and ES&H team support. The budgets are prepared annually and reviewed and approved by the responsible AD.

Service Centers are established where direct funding is not practical and activities can be charged to users based on usage or other measure. Institutional Service Center examples include Site

Maintenance costs distributed through the Laboratory Facility Charge and Procurement costs distributed through the Material Procurement Charge. The institutional Service Center budgets are reviewed in a manner similar to G&A. ADs are responsible for the general and financial management of Service Centers in their areas.

In the direct program area, the management from the Director down is responsible for establishing the priorities of the work. ADs delegate ES&H authority to managers in their organization; however, the ADs remain accountable to the Laboratory Director for ensuring that ES&H activities are performed according to LLNL requirements. LSO provides the necessary ES&H and QA expertise, guidance, and services to assist ADs and their management chains in meeting ES&H requirements.

ES&H impacts are considered when prioritizing capital needs including Line Item Projects, General Plant Projects and Capital Equipment. Line Item Projects are proposed by Directorates and scored by AD Facility Managers in four major areas including Health and Safety, Environmental and Waste Management, Safeguards and Security, and Mission and Investment. DOE/Defense Program (DP)-funded projects, which include institutional projects, are reviewed by the Council on National Security before submittal to DOE.

The budget formulation process for DOE/DP-funded General Plant Projects (GPP) explicitly considers ES&H needs when recommending GPP for review and approval by DOE/OAK. Directorates rank their projects, balancing ES&H considerations with other needs. The LLNL GPP Funding Review Committee has representatives from the Hazards Control and Environmental Protection Departments to ensure that ES&H considerations receive appropriate level of attention, review, and prioritization.

Institutional General Purpose Capital Equipment requirements for ES&H needs are prioritized with other needs by the Laboratory. Submittals are required to identify any ES&H impacts. Directorates prioritize their requests for review by Senior Management before final funding allocations are made.

One summary of the results of the annual budget request process is contained in an annual update of the Environmental, Safety, and Health Management Plan (Ref. 19) that LLNL prepares and submits to DOE. It is a five-year planning document that provides a descriptive summary of the current ES&H approach, actions, concerns, and funding assumptions as well as cost projections for major activity categories and for each identified activity. These cost projections are those associated with managing risks and achieving ES&H expectations. Included are Operating, Capital Equipment, General Plant, and construction line item cost projections for core, planned compliance, and improvement activities. To provide a complete perspective, the activities in both G&A and direct budget categories are addressed individually and together. The projections start

with the current fiscal year status, address the plans for the next fiscal year, and provide the projections for the five fiscal years beyond.

9.2 Performance Objectives, Criteria, and Measures

Objective standards of performance were first formally included in Appendix F of Contract 48 in November 1992. The present-day hierarchy of Performance Objectives, Criteria, and Measures (POCMs) was developed in FY93. These objective standards of performance provided the basis for evaluating both Science and Technology and the areas collectively known as Operations and Administration. As of FY99, Operations and Administration included ten functional areas with ES&H accounting for 100 of the 500 possible points. Another 500 points are allocated to the evaluation of Science and Technology.

The process to negotiate, approve, and modify the POCMs is a structured one and operates under the direction of the LLNL, DOE, and UC Performance Based Management Steering Committee. This steering committee provides guidance to the functional teams (representing DOE, UC, Labs) responsible for directing annual reviews, desired improvements, and mid-year changes. The POCMs have been modified to reflect changes to budgets, program goals, significant new priorities, and obligations to external oversight and regulatory authorities. The process begins in March with meetings of the steering committee. During March through June, the functional teams meet, propose improvements, and revise their POCMs. The functional teams include the UC Functional Manager and senior managers from each Laboratory and the local DOE office. When the functional teams have agreed on a set of POCMs for the next fiscal year, they are delivered to the Appendix F steering committee for final approval and the contract is modified.

In FY98, all three UC Laboratories aligned the ES&H POCMs with the DOE ISM approach and moved toward a more balanced evaluation structure by delineating output metrics from process metrics. This architecture provided a clear link to the DOE ISM approach and the management systems at the Laboratories as they exist and as they are transformed through ISM. All three Laboratories have one ES&H performance objective that is the objective of ISM. Under the ISM objective, the ES&H functional team for LLNL developed a site-specific set of performance criteria and performance measures.

The internal process used by LLNL to review and approve the ES&H POCMs was adopted several years ago. In this, an Appendix F functional manager works with the ES&H Working Group to manage the POCM process and to assist in integrating the POCMs into program operations.

Progress in meeting the POCMs is tracked during the year and Laboratory managers, UC, and DOE are kept apprised of the status. Toward the end of each year, LLNL prepares an in-depth

self-assessment of LLNL's performance according to the POCMs. Upon receipt of the LLNL self-assessment, UC and then DOE evaluate and score the LLNL operations and activities for the year based on the POCMs and following the steering committee guidance.

10. STANDARDS AND REQUIREMENTS

10.1 Contract 48 Requirements

Contract 48 stands as the fundamental basis for the operations of the Laboratory. The current official language and provisions provide the legal basis for all activities. Clause 5.5 - DEAR 970.5204-78 Laws, Regulations, and DOE Directives (June 1997) (Modified), taken from 48 CFR 970.5204-78 and effective October 1997 (see Section 18B), contains the fundamental operative statement in 5.5(a):

> *"In performing work under this contract, the Contractor shall comply with the requirements of applicable federal, state, and local laws and regulations, unless relief has been granted in writing by the appropriate regulatory agency."*

which is continued in 5.5(b):

> *"In performing work under this contract, the Contractor shall comply with the requirements of those DOE Directives, or parts thereof, identified in the List of Applicable Directives (List) referred to in Appendix G, DOE Directives."*

With the completion of the formal process and approval of the WSS set, as described in the next Section, they were incorporated in Contract 48 per the last part of 5.5(f):

> *"When such a process is used, the set of tailored ES&H requirements, as approved by DOE pursuant to the process, shall be incorporated into the List as contract requirements with full force and effect. These requirements shall supersede, in whole or in part, the contractual environmental, safety, and health requirements previously made applicable to the contract by the List."*

The WSS set in Contract 48 provides the ES&H requirements for LLNL as of August 5, 1999. These, along with the ongoing actions on non-contract standards and practice, are being incorporated through an established LLNL process into the ES&H Manual and other operating documentation (see Section 12.2). Contract 48 contains in Clauses 5.5 and 6.7 the language providing for WSS and ISM, respectively, and their incorporation upon completion, as described in other sections of this Description.

10.2 Work Smart Standards

LLNL, UC, and DOE used the Necessary and Sufficient (N&S) Process to select a comprehensive set of standards that define the ES&H requirements for LLNL into Contract 48 in accordance with Clause 5.5 (f):

"Environmental, safety, and health (ES&H) requirements applicable to this contract may be determined by a DOE approved process to evaluate the work and associated hazards and identify an appropriately tailored set of standards, practices, and controls…"

Applying the N&S process requires the adherence to the DOE Policy, "Authorizing Use of the Necessary and Sufficient Process for Standards-Based Environment, Safety and Health Management," DOE P 450.3 (Ref. 20) of January 25, 1996, and the DOE Manual, "The Department of Energy Closure Process for Necessary and Sufficient Sets of Standards," DOE M 450.3-1 (Ref. 21) of January 25, 1996. These documents define the process and its required elements. During the establishment of the N&S Process at DOE, it was determined that the resulting standards should be called Work Smart Standards (WSS).

With these contractual obligations and the DOE Policy and supporting documents, the Laboratory and DOE/OAK initiated the process in May 1997 to select a tailored WSS set applicable to the work at LLNL. The process was formal with structured elements and accompanying documentation. A Convened Group, the process steering committee, with members from LLNL, UC, and DOE/OAK was established to manage and support the successful completion of the process and selection of the WSS set. ES&H professionals from LLNL, DOE/OAK, UC, and other DOE sites working with Laboratory program, facilities, and operations personnel obtained a comprehensive understanding of the work and hazards and established the appropriate set of standards that when implemented will provide adequate protection to the workers, the public and the environment. All personnel involved were selected individually by the Convened Group upon review of credentials against established participation criteria. All participants were trained to the DOE approved training modules.

The N&S process, utilizing a team approach, focuses on the work and its associated hazards to select those standards that provide the appropriate level of safety. For LLNL, the work and associated hazards were identified for all nuclear facilities and a carefully chosen set of representative non-nuclear facilities. Based on this information and extensive knowledge of ES&H standards, the Standards Identification Team selected the appropriate standards that collectively apply to the institution. These standards were reviewed internally and confirmed to be appropriate and feasible by an outside independent team of ES&H experts. With the satisfactory completion of the confirmation step in March 1999 the WSS set was forwarded to the approval authorities, the LLNL Director and DOE/OAK Manager, signed August 5, 1999, and incorporated into Contract 48.

The WSS set is important as an input to the ISMS and as a key operational component for developing controls. It also fulfills in a conscious, organized, and broadly reviewed manner Guiding Principle 5: Identification of Safety Standards and Requirements. The evaluation of work at the facility and activity level, as described in Sections 6 and 7 of this Description uses the WSS set obtained by the N&S process. Establishing the WSS set while this Description was

in preparation allowed the appropriate connections to be made and to align them both with the current thinking and needs. In the relationship between WSS and ISMS, the WSS set provides the general and specific requirements which are tailored to LLNL activities and the ISMS establishes the structure and implementation mechanisms for using the WSS set as the basis for performing work safely.

10.3 Transition to Work Smart Standards

Upon incorporation of the WSS set into Contract 48, they are formally incorporated into the ISMS with the necessary preparations having been made. With this, the ES&H Subject Matter Expert structure is incorporating the WSS set into all of the appropriate sections of the ES&H Manual and all of the necessary changes and adjustments are to reference the specifics in the WSS set. These updates are being reviewed by the appropriate DDO appointed committee for content, consistency, and correctness in a considered and comprehensive process and approved for the Laboratory by the DDO. The intent is to implement the WSS set as expeditiously as possible, but with the large volume of material contained in the ES&H Manual it is going to take some time. A project is underway to address the incorporation of both the WSS set and ISM into the ES&H manual. The goal of this project is to have all required documentation updated for the Final Verification.

The operational transition to the WSS set is fundamentally covered in the Contract 48 language. Their incorporation and availability in the ES&H Manual provides the mechanisms for the implementation. There are a number of new standards requiring changes having cost and schedule impacts. For these, it has been agreed between DOE/OAK and LLNL that they can be accomplished using formal implementation procedures that are now in preparation and review. The HEPA filter standard is foremost among these. Other transition implementation actions and adjustments are underway and will be evaluated in the Final Verification.

10.4 Maintenance of Work Smart Standards

As change occurs, there will be new knowledge, technologies, and issues. With these, there will be new laws, regulations, and standards. Consequently, there is a need to periodically review and update the WSS set in Contract 48 again using a formal process. A formal Change Control Process for the WSS, utilizing the principles of the N&S Process, has been identified. The Change Control Process provides an important opportunity to keep the WSS set up to date and includes provisions for addressing new and special situations that might arise from any source.

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11. EVALUATING AND RESOLVING NON-COMPLIANCES

11.1 Requirements

Under the provisions of Contract 48, the Laboratory conducts an annual institutional-level self-assessment to evaluate its management performance in a number of administrative and operational areas, including ES&H. This self-assessment is made against a set of POCMs (see Section 9.2). The self-assessment report is reviewed and verified and the Laboratory's performance evaluated by DOE/OAK and the University of California, Office of the President.

The Laboratory also contracts with outside experts to conduct a triennial review of the ES&H Internal Review System. This review, the annual institutional-level self-assessment, ARO evaluations, and other special reviews are accompanied by DOE/OAK management performance appraisals of the Laboratory which include several ES&H areas.

In addition to the institutional assessments, LLNL has a well-developed annual self-assessment program that is specified in the ES&H Manual. These Laboratory organization self-assessments evaluate the effectiveness of adherence to ES&H requirements and implemented controls at both the facility and activity levels.

The formal self-assessments of the Laboratory provide the status at a particular time. Also important are the wide variety of on-going, multi-faceted review processes conducted by LLNL personnel that provide timely information and insight on the status and performance at each level within the Laboratory.

11.2 Corrective Action Process

The deficiencies identified in operations and facilities during self-assessments and during audits, reviews, and appraisals by Laboratory and external oversight entities are reviewed to determine appropriate corrective actions. The objective of this process is to improve safety in the workplace and compliance with ES&H requirements. The responsible management chain assigns responsibility for implementing actions to correct self-assessment deficiencies and uses the deficiency tracking system to monitor the status until the actions are completed and verified. Findings and recommendations from appraisals, audits, and reviews of operations are documented in reports and put into the deficiency tracking system where appropriate. In response to the findings and recommendations, management develops action plans to correct the identified operational and management problems. The plans include schedules for completing the corrective actions and provide for regular reporting to the agency or office that conducted the appraisal until all deficiencies are closed-out.

A corrective action process is also implemented by management in response to findings and judgment of needs identified in incident analysis reports. The ES&H Manual contains a description of the Laboratory's incident analysis process and follow-up requirements. Corrective action plans are also being developed as a result of the analysis of immediate, contributing, and root causes of DOE-reportable occurrences. The primary objective in formally reviewing incidents, accidents, and other occurrences is to prevent the recurrence of the event and to reduce risk in a specific operation or facility.

11.3 Deficiency Tracking System

The Laboratory's deficiency tracking system was established to track the status of ES&H deficiencies from the time they are identified until they are resolved. The database management system is administered by ARO using the Deficiency Tracking System, Policy and Procedure Manual. Corrective actions are tracked on a computer-based system designated the Deficiency Tracking (DefTrack) System.

Specific areas and items of particular interest to the Laboratory were identified and assigned a "compliance code." The compliance codes are listed in "families" related by their general category; for example, under environmental issues are Air Quality, NEPA, PCB, Water Quality, etc., and under the general heading of health and safety related issues are such areas as Industrial Hygiene, Industrial Safety, Fire Safety, etc. Generic codes are also contained in DefTrack to accommodate findings that are not included as specific compliance codes. The fine-grain of the compliance code structure facilitates a "trending" process that materially contributes to the development and implementation of effective problem solution strategies.

A set of severity criteria, calibrated to OSHA or other relevant requirements, were developed to complement the compliance codes to gather information not only on the types of ES&H issues that occur at the Laboratory, but to determine their severity as well. These severity criteria identify the priority assigned to correcting the deficiencies.

Each Directorate maintains its own deficiency-tracking database and periodically transmits or transfers, i.e., "rolls-up," certain categories of deficiencies to the official LLNL database, which is maintained by ARO. Schedules and criteria for roll-ups are established by the ES&H Working Group and the process is managed by ARO. In addition, ARO provides trending reports to individual Directorates and develops an institutional summary report annually.

12. FLOW DOWN OF REQUIREMENTS

12.1 Basics

The LLNL Institutional safety requirements apply Laboratory-wide to the entire workforce. These are now contained in the WSS set in Contract 48. The ISMS provides the process to connect the WSS set to the work, implement them, and to conduct work safely. By executing work in accordance with the controls developed from the WSS set the workforce, the public, and the environment are adequately protected.

The LLNL ISMS incorporates tailoring of requirements in addressing mission needs and the hazards involved. This Description and the ES&H Manual provide the Institutional approach for integrating safety requirements into the processes of planning and conducting work and are the basis for alignment and content of the lower level documents. The ISMS becomes more detailed and specific in the lower level documents that provide the organizational structures (Directorates, Departments and Divisions) and operational processes.

Laboratory operations are addressed through safety management processes and controls contained in the ES&H Manual and other documents. These processes include management direction for planning and conducting work activities and facility management for work performed on the LLNL sites as well as for work performed by LLNL personnel at other locations.

The ES&H Manual and other institutional level documents establish the processes to be used by Laboratory programs and organizations, facilities, and the Laboratory work force. These documents include formal processes used throughout the Laboratory for applying and establishing Institutional level requirements and practices locally at the Facility and Activity levels.

As hazards increase, so does the formality, intensity, and redundancy of controls and assurance measures. Laboratory manuals and institutional documents define the explicit institutional consistency for formality of planning, documentation of process activities, record keeping, and the level of independence of people involved in their review and confirmation of adequacy needed for establishing facility- and activity-specific expectations. They allow for the established requirements to be appropriately tailored to meet specific needs of facilities and activities while covering a wide range of work and the associated hazards. These manuals and other institutional level documents also establish Laboratory requirements for other areas of safety management that involve development and tracking of corrective actions, such as occurrence reporting, incident and accident analyses, and self-assessments and improvement processes. Similarly, they establish technical requirements and often prescribe explicit administrative and/or engineered controls for

specific hazards. The required controls are mandatory anywhere throughout the Laboratory wherever the work activity manifests similar hazards.

12.2 The Process for the ES&H Manual

The new process for establishing the ES&H requirements applicable to LLNL involves three key steps:

1) Development of the WSS set and incorporation of the set into Contract 48 (See Section 10).

2) Identifying new and changing laws and regulations, Contract 48 requirements, and UC policies as applicable to current and new work at LLNL. This is accomplished by the WSS Change Control Process.

3) Incorporation of the appropriate requirements from the WSS set into the ES&H Manual.

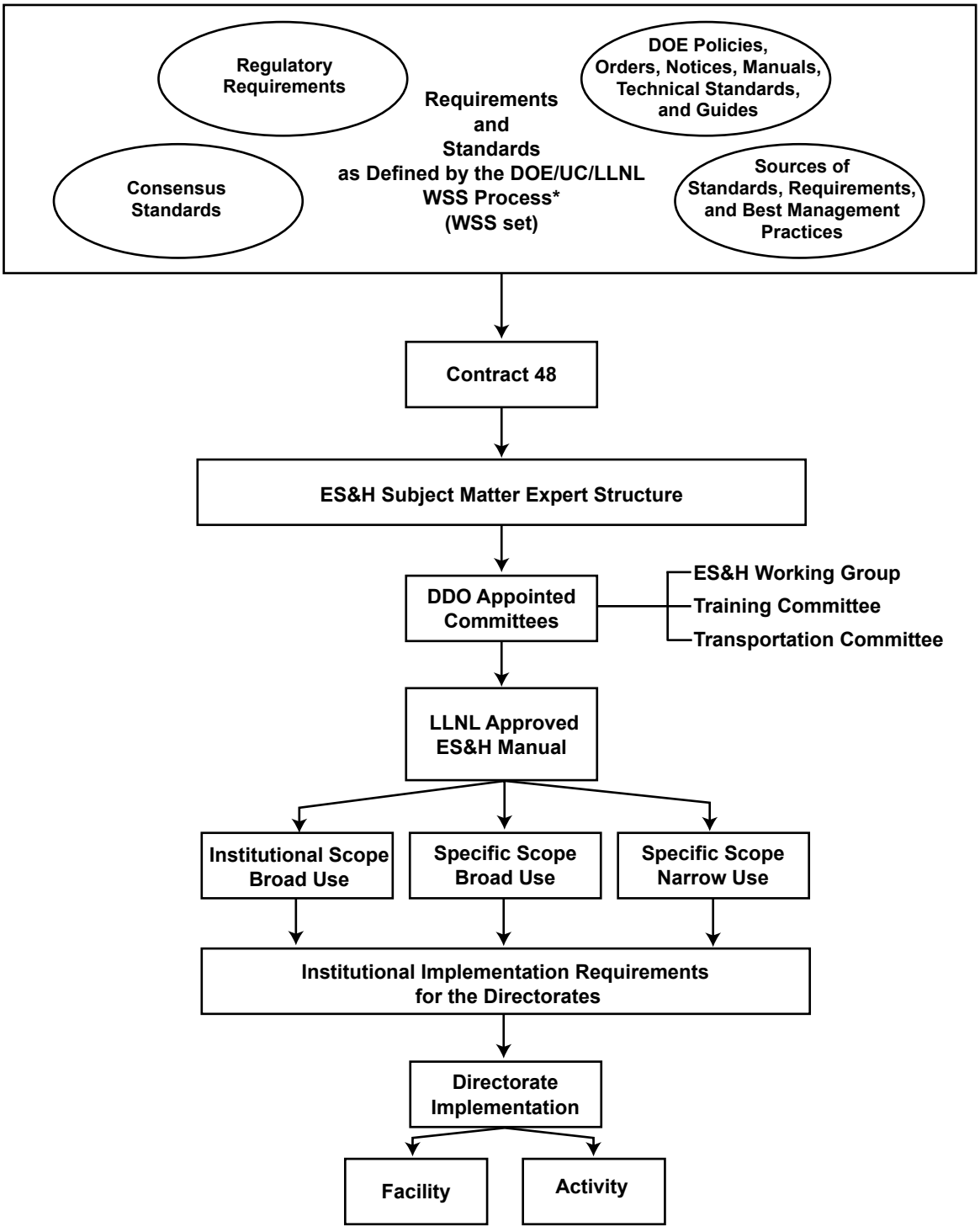
The overall process is described in the following sub-sections and shown in Figure 12.1

12.2.1 Identification of Requirements

LLNL's ES&H requirements are derived from numerous sources, but come primarily from federal, State of California, regional, local statutes, regulations and ordinances; DOE directives; national consensus standards; and University of California policies. These regulatory and contractual requirements are dynamic and cross many technical disciplines. These are all included in the LLNL WSS set and incorporated into Contract 48 as described in Section 10. LLNL relies primarily on the professional staff in its institutionally managed ES&H support organizations (e.g., HCD, EPD, and HSD), the Office of Contract Management, and the Office of the Laboratory Counsel to monitor for new and changing regulations and DOE directives that pertain to the work and its associated hazards at LLNL and affect the standards in the WSS set. LLNL interacts with regulatory agencies, UC, and DOE staff through meetings and site visits. The Laboratory also makes heavy use of modern communications systems as part of its information resources. When requested, ES&H experts and programmatic personnel review and comment on proposed revisions to existing DOE directives, new directives, and proposed rules.

12.2.2 Evaluation of Requirements

Management of the appropriate ES&H support organization assigns departmental staff to review, interpret and analyze proposed and final regulations, rules, DOE directives, etc. This review assesses whether the potential requirements specifically apply to the work performed at LLNL, and if so, whether compliance actions will have to be implemented Laboratory-wide or will be



* DOE M 450.3-1, DOE Closure Process for Necessary and Sufficient Sets of Standards

Figure 12.1: Information Flow-Down Process for the ES&H Manual and Implementation.

limited to only one or a few organizations and when they become effective through the WSS Change Control Process. There are conscious considerations of the scope and use of potential requirements, whether they have Institutional Scope and Broad Use, Specific Scope and Broad Use, or Specific Scope and Narrow Use (see Section 15.1 for definitions), in order to direct and use them properly. The potential impacts on Laboratory operations are also evaluated; e.g., the need for additional training, record keeping, reporting, new instrumentation systems, and modifications of existing facilities and operations.

The next step involves a review of the analysis of new requirements and impacts by the DDO appointed committees, particularly when institutional implementation of requirements is indicated and significant costs are associated with compliance. The organizations represented on the DDO appointed committees provide feedback to the ES&H professionals on programmatic and cost impacts, and the practicability of proposed implementation actions.

In some situations, the impact of a requirement or standard is limited to a small group of individuals or a specific department. These limited impact requirements may be handled directly by the impacted organization through their Subject Matter Expert(s).

12.2.3 Incorporation of Requirements

A variety of activities may be used in the process of communicating new requirements once they have been determined. These include establishing a timeline for implementation and determining how the requirement will be added into the documentation base. This may result in a new policy or guidance document, or a modification to existing documentation, such as a modification to the ES&H Manual.

The ES&H Manual is developed and revised to aid management in integrating requirements into Laboratory work activities. This manual either contains specific requirements or points to other documents containing the requirements applicable at LLNL. Generally, if the requirements are applicable to only a small subset of individuals at LLNL, or if the requirements are extensive and complex, the ES&H Manual will merely point back to the original requirements. In those situations when the ES&H Manual provides pointers, the ES&H professionals will assist in the interpretation and implementation of the applicable requirements.

12.2.4 Requirements to Users

Individuals responsible for work activities are responsible for ensuring the hazards associated with the work are analyzed and controlled according to the ES&H Manual. Controls in the ES&H Manual or that are identified by the ES&H professionals to reduce hazards, are to be implemented by those performing the work activities, unless an exemption from those controls

has been appropriately approved. The Laboratory has a formal process for obtaining exemptions and variances as described in Section 12.6.

12.3 Subcontractor Safety Management

In ISM, the necessary focus of the subcontractor requirements is on the safety of the workers and the impact their actions have on the environment. Basic to all of the requirements are those in Contract 48, Clause 6.7, reproduced in Section 18A. In the LLNL ISMS, the core requirements for subcontractors are in Section 6.2.3.4. Application of these requirements along with other appropriate core requirements in Section 6 and use of the provisions of Section 7 and the ES&H Manual are necessary to meet the subcontractor safety management responsibilities.

P&M is to ensure that safety requirements are included in the subcontractor operational process and procedures that control how subcontractors perform work for LLNL. The system to accomplish this needs to involve the organizations requesting the subcontract work and as necessary the appropriate ES&H Teams. All are critical elements of the system and each have their own particular responsibilities in a structured process that is defined in Section 6.2.3.4. This is to be used for requests for subcontract work initiated October 1, 1999 and thereafter. The system must ensure that appropriate subcontract safety requirements are included in contractual language that binds the subcontractor to maintain alignment with the established procurement practices. These safety requirements include the applicable safety clauses and safety standards.

The system must include the details of the Laboratory's oversight responsibilities for a subcontractor's safety management system in the subcontract language, ensure the flow down of appropriate safety requirements, and ensure that subcontractors are evaluated and selected on the basis of historical safety performance and other relevant criteria. Additional information and elaboration are in the ES&H Manual and the P&M Procedures.

12.4 Procurement Safety Management

The procurement of goods and materiel is a key function to be addressed as part of ISM. This is accomplished in the LLNL ISMS through the use of a procurement safety management process that determines the hazards of the goods and materiel to be procured, received, and delivered to the point of intended use. The process provides a hazards determination for ordered goods and materiel that are hazardous, dangerous, or toxic. The planned use of these is addressed in the work activity evaluation, documentation, and authorization process defined in Section 7.3.

In the procurement safety management process, the requesting organization is to provide the procurement entity with the proper hazards determination so that the safety responsibilities can be fulfilled. The process is to be used for purchase requests initiated October 1, 1999 and

thereafter. This is to be done consistent with the safety requirements in Contract 48, the applicable core requirements in Section 6, and the provisions of Section 7 and the ES&H Manual. In the process, the organization requesting the goods and materiel is to evaluate and determine the hazards of the goods and materiel being ordered. The appropriate ES&H Team is to assist in this, as necessary. The resulting hazards determination is to be provided to the procurement entity along with the purchase request. P&M is to maintain the necessary procedures for the conduct of this process. Additional information and elaboration are in the ES&H Manual and the P&M Procedures.

12.5 Lessons Learned

Lessons Learned are to be shared in order to improve operational safety by benefiting from the experience of others. Lessons Learned are to be prepared and distributed whenever there is an opportunity to share a valuable new work practice or warn others of an adverse practice, experience, or product. The core requirements for lessons learned are defined in Section 6.7.1.6.

LLNL has an established Lessons Learned program. It includes the basic elements presented in DOE Standard "Development of Lessons Learned Programs," DOE-STD-7501-95 (May 1995). This standard is used as it is included in the WSS set and otherwise provides guidance in the daily conduct of the LLNL Lessons Learned program. Lessons Learned is an integral part of the Laboratory's ISMS and is an important mechanism in accomplishing DOE Core Function No. 5 - Provide Feedback, and Continuous Improvement.

The Lessons Learned program is conducted by the Lessons Learned Coordinator who is appointed by the HCD Head in support of the ES&H Working Group. The Lessons Learned Coordinator, in consideration of the core requirements, is responsible for:

- Gathering and analyzing information while focusing on issues most relevant to LLNL operations
- Establishing and maintaining a communications and coordination process with the Laboratory's PAAA Office on topics and items of mutual interest and use
- Coordinating a review of prospective Lessons Learned by the various ES&H organizations, including the ES&H Working Group executive committee
- Distributing Lessons Learned to individuals identified by each Directorate's Assurance Manager in a timely manner
- Posting Lessons Learned on the "LLNL only" website

- Serving as a point of contact for follow-up and feedback to the Laboratory, as necessary, on actions taken in response to Lessons Learned

- Transmitting to DOE Lessons Learned considered of particular interest outside of LLNL through the DOE listserver program and/or through DOE's website for Lessons Learned. (All Lessons Learned will be reviewed prior to release by LLNL Legal, TID Review and Release, ES&H Working Group, and HCD.)

Directorates are to encourage employees to bring to the attention of their supervisor and/or Directorate Assurance Manager topics that could serve as possible Lessons Learned. Each Assurance Manager, in consideration of the core requirements, is responsible for:

- Ensuring distribution of Lessons Learned to appropriate LLNL personnel

- Bringing to the attention of the ES&H Working Group appropriate Lessons Learned in a timely manner

- Identifying Lessons Learned that require follow-up action and providing information to the Lessons Learned Coordinator regarding what action has been taken.

- Identifying Lessons Learned from his/her Directorate to be forwarded to the Lessons Learned Coordinator

All Lessons Learned communications are to include: what happened, Lessons Learned from the activity or incident, recommendations of actions to be taken, and where to get additional information or help. Lessons Learned are to be incorporated, as appropriate and in a timely manner, into LLNL safety training.

Lessons Learned are to be integrated into work planning and control so the full benefit of relevant and timely Lessons Learned can be applied. The organization authorizing work is to ensure that applicable Lessons Learned maintained on the "LLNL only" website are considered during the process of authorizing work. Similarly, each is to incorporate a review of Lessons Learned maintained on the "LLNL only" website as part of its self-assessment program to ensure continued utilization of relevant Lessons Learned.

In effectively using the Lessons Learned Program there are important opportunities to not repeat problems that have been addressed and fixed in other organizations at LLNL, elsewhere in DOE, and externally in commercial and industrial organizations. And, in doing so, improve safety performance. An additional value is to obtain improved consistency across DOE in the fixes made to problems encountered and included in Lessons Learned.

12.6 Exemptions and Changes

The Laboratory has formal processes, described in the ES&H Manual, by which organizations and individuals can seek deviations, exemptions, variances, or waivers to institutional requirements contained or referenced in the ES&H Manual. Given valid justification, organizations and individuals can obtain a particular exception from established institutional requirements as long as equivalent or compensatory measures are in place to meet requirements. The exception nomenclature, the necessary accommodations, and approval levels depend on the requirement specifics. This may require DOE or other governmental agency approval.

The ES&H Manual and other ES&H institutional documents can be changed at the discretion of the Laboratory as long as they remain consistent with the requirements in Contract 48 and this Description.

Changes to existing ES&H policies and procedures or the generation of new ES&H policies may be proposed by a Directorate, the ES&H staff, a DDO appointed committee such as the ES&H Working Group, the Council of Strategic Operations or other senior managers. New ES&H policies or major changes to existing ES&H policies and procedures are recommended by the relevant Subject Matter Experts or appropriate DDO appointed committee to the DDO for approval, or in cases of potentially significant institutional impact, elevated to the Council on Strategic Operations for endorsement and to the Director's Office for approval.

13. ISMS CHANGE CONTROL BOARD PROCEDURE

13.1 Purpose

This procedure establishes requirements for the conduct of the LLNL ISMS Change Control Board (CCB). The CCB is tasked with reviewing requests for changes to the LLNL Integrated Safety Management System Description (ISMSD) and the Superblock ISMSD.

13.2 Scope

This procedure applies to all personnel involved in submitting, reviewing, or approving requests for changes to the ISMSDs.

13.3 Composition of the Change Control Board

13.3.1 Membership

The CCB will be composed of the following, each appointed by their cognizant organization:

13.3.1.1 DOE/OAK Representative

13.3.1.2 LLNL Representative

13.3.1.3 University of California Representative

13.4 Responsibilities

13.4.1 DOE/OAK Manager

The DOE/OAK Manager is responsible for approving any changes to the LLNL Institutional ISMS and the Superblock ISMS Descriptions. The DOE/OAK Manager has delegated this responsibility to the Assistant Manager for the Livermore Site (AMLS), the Approving Official, by formal memorandum.

13.4.2 CCB Chair

The AMLS will designate a DOE/OAK representative as a CCB member. For consideration of ISMS changes, this DOE/OAK representative will serve as the CCB Chair. The CCB Chair is responsible for:

13.4.2.1 Coordinating change request packages

13.4.2.2 Reviewing submitted ISMS Description change request data

13.4.2.3 Requesting additional technical personnel to attend the CCB meetings to serve as advisors to the CCB Members

13.4.2.4 Scheduling meetings of the CCB at a minimum annually, but additionally when requests for change are considered significant. A significant change would be one resulting from a change to a DOE Order or Policy impacting ISMS or a substantial change to the Laboratory's implementation of ISMS contained in the system Description.

13.4.2.5 Recommending that the Approving Official approve or disapprove requests for change to the LLNL Institutional and Superblock ISMS Descriptions. The CCB Chair will also provide any minority opinions to the DOE/OAK Manager for consideration. If the change is DOE/OAK originated and consensus on the change has not been reached, the minority opinion will be provided to the DOE/OAK Deputy Assistant Manager for the Livermore Site (DAMLS) and the LLNL Associate Deputy Director for Operations (ADDO) for resolution (see Section 13.5.4.3 below).

13.4.2.6 Directing the conduct of the CCB

13.4.3 CCB Members

Members of the CCB are responsible for:

13.4.3.1 Coordinating and submitting change request packages originating in their respective organizations to the CCB Chair

13.4.3.2 Reviewing submitted change requests

13.4.3.3 Attending CCB meetings as required

13.4.3.4 Reaching consensus with other CCB Members to approve or disapprove requests for change; or

13.4.3.5 Documenting majority and minority opinions if consensus cannot be reached.

13.5 Procedure

13.5.1 CCB Preparation

13.5.1.1 The organization originating a change will submit the change through their designated CCB member to the CCB Chair. Change requests will be in the format included in this procedure shown in Figure 13.1.

13.5.1.2 The CCB Chair will direct that a CCB be convened using the criteria in 13.4.2.4.

13.5.1.3 Upon receipt of the Request for Change Package, the CCB Chair will distribute copies of the package to all CCB members for review.

13.5.1.4 The CCB Chair will review the package and determine if additional information is required or if additional technical personnel should be present at the CCB's proceedings to provide input to the CCB members.

13.5.1.5 If additional technical information is needed or personnel are required to attend CCB proceedings the Chair will notify the appropriate CCB member of the requirements at least one week prior to the CCB convening date and will specify what technical information or personnel the member is expected to provide.

13.5.2 Conduct of the CCB Meetings

13.5.2.1 The CCB Chair will assign an individual to record the minutes of the CCB meeting. CCB meeting minutes will contain as a minimum, the date and time the CCB was convened, the names of CCB members, a list of attendees, and the proposed changes discussed and the results.

13.5.2.2 The CCB will review each change request submitted.

13.5.2.3 A representative of the organization submitting the change request will discuss the change request. The discussion will include why the change is necessary, implementing assumptions as applicable, and the impact of the change.

13.5.3 Records

The following records will be maintained for each CCB meeting:

LLNL ISMS Description Change Request Form

For use in the ISMS Change Control Board (CCB) Procedure conducted per the instructions in the LLNL ISMS Description.

Description of Change Requested:

Justification for Change Request:

Submitted: _____
DOE/UC/LLNL CCB Member Date

CCB Chair Recommendation:

_____
CCB Chair Date

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Figure 13.1: LLNL ISMS Description Change Request Form.

13.5.3.1 Change request packages, including copies of Change Request Forms signed by the CCB Chair.

13.5.3.2 CCB meeting minutes.

13.5.4 Function of the CCB

13.5.4.1 After any necessary discussion, the CCB Chair has the responsibility to recommend to the Approving Official the final approval or disapproval of a change request for ISMS Descriptions.

13.5.4.2 For change requests originating with LLNL or UC, a majority vote of the CCB members is sufficient for the CCB Chair to recommend approval or disapproval to the Approving Official. The CCB Chair will forward any majority and minority opinions to the Approving Official for consideration. A CCB consensus that the change is not to be recommended terminates further consideration of the change. (See Integrated Safety Management System Change Control Board Process Diagram in Figure 13.2.)

13.5.4.3 Change requests originating with DOE/OAK that are not unanimously recommended for approval by the CCB will be forwarded to the DOE/OAK Deputy Assistant Manager for the Livermore Site (DAMLS) and the LLNL Associate Deputy Director for Operations (ADDO) for resolution. If they agree that the change is required, the change request will be forwarded to the Approving Official for approval. Agreement between the DAMLS and the ADDO that the change is not to be approved terminates further consideration of the change.

13.5.4.4 At the conclusion of the CCB proceedings, the Chair will indicate the CCB's approval or disapproval for each request for change in the space provided on the Change Request Form. The Chair will then forward the Change Request Form to the Approving Official.

13.5.4.5 A signature by the Approving Official indicating approval of a change request is DOE authorization for the laboratory to make the described change to the affected ISMS document.

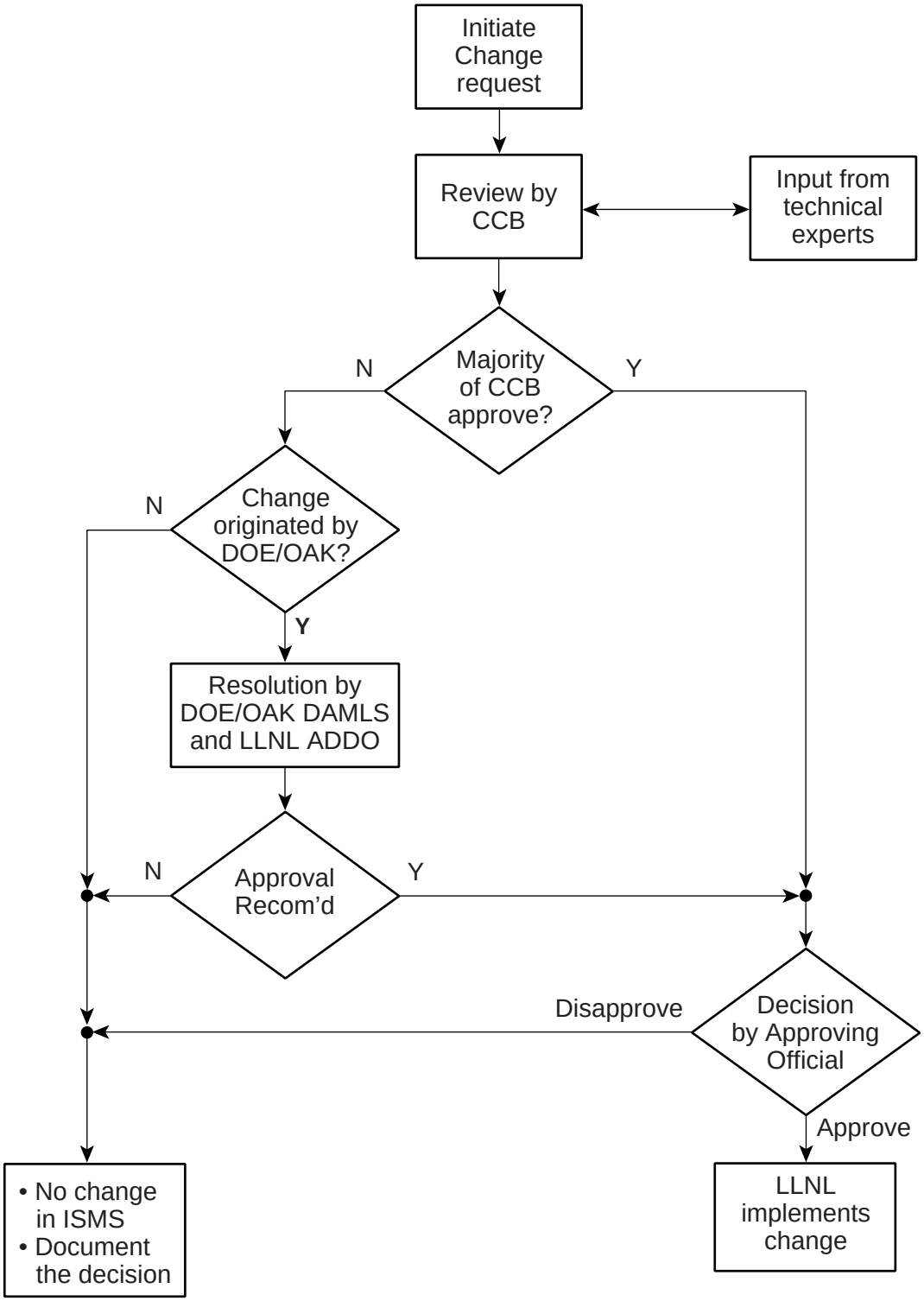

Figure 13.2: ISMS Change Control Board Process Diagram.

14. IMPLEMENTATION PLANNING

The main objective in Implementation Planning is to achieve in an organized and comprehensive manner the successful implementation of the LLNL ISMS so it can beneficially continue onward. The Contract 48 requirements provide a clear and durable basis for what must be done in ISM. These are further supported and extended by the set of guidance from DOE/OAK that is summarized in the letter of May 10, 1999 (Ref. 22). Included in the set of guidance is the letter of August 18, 1998 (Ref. 5) that provided the essential requirements and format for this Description. Finally, Secretary Richardson's direction in his March 3, 1999 Memorandum to All Department and Contractor Employees on Safety-Accountability and Performance (Ref. 3) to, "put ISM in place by September 2000," provides a critical completion date.

Within the time frame provided, LLNL has proceeded to develop, update, and use an overall Implementation Plan. This is presented in Attachment I in Section 19. It includes the major actions involved from the preparation and actions of the Description itself, to the WSS action, and on to the necessary communications and training. Separate, more detailed planning has been prepared on a number of these actions and particularly those on communications and training. Several other supporting plans exist including one for the Superblock ISMS process and another for the update actions required for the ES&H Manual.

The Implementation Tasks, Schedules, and Milestones contained in Attachment I are subject to repeated changes for a spectrum of reasons and so having been placed outside of the formal Change Control Process for the Description they can be better updated and used. Using the Description Version and the change date will help ensure a proper status marker for Attachment I as changes are incorporated.

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15. DEFINITIONS AND ACRONYMS

15.1 Definitions

Assure: To make sure or verify that something was done.

Base Skills: The skills, knowledge, and abilities (SKAs) necessary for a particular vocation and level.

Commonly performed by the public: An activity with hazards commonly accepted by the public, the control of which require little or no guidance or training to perform the work safely.

Directorate: The set of organizational elements (e.g., departments, divisions, groups, programs, projects, offices) operating within the management responsibilities and authority of an Associate Director. Includes, for the Description, equivalent organizations in the LLNL organizational structure (i.e., LSO).

Ensure: To cause something to be done, either by doing it or by following up on assignments and delegations to verify that something was done. To guarantee a particular outcome. The Laboratory uses this term when referring to situations involving direct responsibility for activities, as in the case of the Responsible Individual.

ES&H Professionals: The LLNL Subject Matter Experts and members of the ES&H Teams.

Facility: A building, group of buildings, or specific area of the Laboratory that is managed by a single responsible Associate Director (see Facility AD). May also be used to indicate a portion of a building, such as a laboratory or group of laboratories dedicated to a specific operation.

Facility AD: Associate Director who provides management of facility operations, concurrence of work performed in the facility, management of the safety envelope, communication of the hazards of the facility, management of the facility infrastructure, and capabilities of the safety support systems.

Facility Safety Plan (FSP): A management-approved document that defines responsibilities for safe operations in a Laboratory facility, describes the hazards, and provides the basic safety rules to control these hazards. The safety rules are to be followed by all personnel present within a specific building or area. Exists as a document on file with the facility manager and Hazards Control Department.

Graded Approach: A method that provides for varying levels of rigor and formality when applying controls commensurate with the hazards involved. To ensure that the depth of detail

required and the magnitude of resources expended for operations are commensurate with each facility's programmatic importance and potential environmental, safety, and/or health impact.

Hazard: A source of danger (i.e., material, energy source, or operation) with the potential to cause illness, injury, or death to personnel or damage to a facility or the environment.

Implementation Plan: A documented plan describing how requirements and expectations will be accomplished.

Institutional Scope and Broad Use: Requirements that are general in scope and apply broadly to the Laboratory. Examples include general ES&H Programs (e.g., Industrial Hygiene, Industrial Safety, Health Physics, and Pollution Prevention), Training, and Quality Assurance. The requirements for hazards frequently encountered at the Laboratory are generally specified in the ES&H Manual.

Operational Safety Plan (OSP): A management-approved document that defines the necessary steps to be taken so that work with potentially hazardous experiments and operations can be conducted safely.

Organization authorizing work: An organization distinguished by having control of funding as well as the responsibility to its sponsor for the accomplishment of the programmatic mission or activity.

Organization supervising work: An organization distinguished by having responsibility for supervising or watching over the performance of people involved in carrying out a work activity and ensuring that work requirements are met.

Organizational position: An organizational role or post created for individuals to fill (e.g., building coordinator, division leader, facility manager, employee/worker, project manager); to be meaningful to people it must incorporate organizational objectives, a clear concept of the major responsibilities involved, bounds on the areas of authority, and the availability of information and resources to satisfy the responsibilities.

Payroll AD: Associate Director who provides technical and specialty personnel to support Program activities directly and by matrixing personnel to support the activities of other Directorates. Responsible for the technical and specialty qualifications, basic job training, and administrative support. Also described as an Administrative AD.

Prestart review: A review of the integrated set of safety controls, resources, and schedules conducted before beginning a work activity.

Program AD: Associate Director who provides Program deliverables through control of and use of funding. Responsible for work authorization, technical deliverables, ES&H, business management, and staff work direction. Uses the funding for personnel, facilities, and services in own Directorate and buys matrixed payroll personnel, and other Directorate's facility capabilities and services functions and products.

Safety: Safety is a term applied throughout this document and is used synonymously with environment, safety, and health (ES&H) to encompass protection of the public, the workers, and the environment as defined in DOE P 450.4 (Ref. 2). Contract 48, Clause 6.7 expands the definition of safety by "including pollution prevention and waste minimization."

Safety envelope: The parameters defining the limits for safe operation of a facility or operation. For example, the maximum amount of material, the maximum operating temperature, and the maximum pressure are boundary conditions which may specify portions of the safety envelope.

Self-assessment: An assessment performed by the responsible organization to determine how well they are performing their jobs and meeting their responsibilities.

Self-assessment plan: A formal, management-approved document that describes a directorate's self-assessment activities and how often they occur, provides a schedule for completing the assessments, and identifies the reports to be generated.

Services AD: Associate Director who provides "fee for services" functions, facilities, and products. Responsible for work authorization, technical deliverables, ES&H, business management, and staff work directions.

Specific Scope and Broad Use: Requirements that are relatively specific in scope and apply broadly to the Laboratory. Examples include Emergency Preparedness, Fire Protection, and Engineering Standards, e.g., some engineering design standards may pass through directly to the engineers without manuals, guides, etc., to assist them other than the stated recognition that the (design) standards are to be used.

Specific Scope and Narrow Use: Requirements that are relatively specific in scope and apply to a limited set of staff, groups or activities. Examples include Firearms and Personnel Assurances.

Subject Matter Expert: An employee at LLNL that is a recognized authority in a particular field. This might include a person from Hazards Control, the Environmental Protection Department, Engineering, Plant Engineering, Chemistry & Materials Science, Computations, etc.

Tailored controls: Engineered and administrative controls, as well as personal protective equipment, selected from the Work Smart Standards and LLNL's ES&H Manual and designed to fit a particular work activity. Properly tailored controls will address the hazards, satisfy the applicable requirements, and provide adequate protection to the public workers, and the environment.

Tailoring: Adapting something--such as a control, safety program, practice, or requirement within the ISMS--to suit the need or purposes of a particular operation/activity, taking into account the type of work and associated hazards.

Work Smart Standards (WSS) set: The set of standards that is necessary and sufficient to meet LLNL ES&H performance expectations and objectives. The WSS set provide adequate protection for workers, the public, and the environment. All work performed at LLNL and the associated hazards must be covered by one or more of the standards in the WSS set.

Work Smart Standards Subject Matter Expert: A designated LLNL employee with knowledge and expertise relevant to the work or one of the ES&H discipline areas who selects and works with the applicable WSS.

15.2 Acronyms

AD Associate Director

ADDO Associate Deputy Director for Operations

AHJ Authority Having Jurisdiction

AM Assurance Manager

AMLS Assistant Manager for the Livermore Site (DOE/OAK)

ARO Assurance Review Office

BN Bechtel Nevada

CCB Change Control Board

CFR Code of Federal Regulations

CSO Council on Strategic Operations

DAD Deputy Associate Director

DAMLS Deputy Assistant Manager for the Livermore Site (DOE/OAK)

DEAR Department of Energy Acquisition Regulations

DDO Deputy Director for Operations

DoD United States Department of Defense

DOE United States Department of Energy

DOE/NV United States Department of Energy Nevada Operations Office

DOE/OAK United States Department of Energy Oakland Operations Office

DOT United States Department of Transportation

EPD Environmental Protection Department (at LLNL)

ES&H Environment, Safety, and Health

FPOC Facility Point of Contact

FSP Facility Safety Plan

G&A General and Administrative (the principal overhead, indirect cost account funding of Laboratory support activities).

GPP General Plant Projects

HAR Hazard Analysis Report

HCD Hazards Control Department

HSD Health Services Department

HWM Hazardous Waste Management

ISM Integrated Safety Management

ISMS Integrated Safety Management System

ISMSD Integrated Safety Management System Description

IWS Integration Work Sheet

LLNL Lawrence Livermore National Laboratory

LSO Laboratory Site Operations

LTRAIN Livermore Training Records And Information Network

M&O Management & Operations

N&S Necessary & Sufficient

NEPA National Environmental Policy Act

NTS Nevada Test Site

OFC Organizational Facility Charge

OPC Organizational Personnel Charge

OSHA Occupational Safety & Health Administration

OSP Operational Safety Plan

P&M Procurement and Materiel Department (at LLNL)

PAP Personnel Assurance Program

PCB Polychlorinated biphenyl

PHA Preliminary Hazards Analysis

PI Principal Investigator

PMC Program Management Charge

POC Point of Contact

POCMs Performance Objectives, Criteria, and Measures

PSAP Personnel Security Assurance Program

QASO Quality Assurance Support Office

QA Quality Assurance

RI Responsible Individual

RRAs Roles, Responsibilities, and Authorities

SAD Safety Assessment Document

SAR Safety Analysis Report

SKAs Skills, Knowledge, and Abilities

SME Safety Management Evaluation

TSRs Technical Safety Requirements

UC University of California

WSS Work Smart Standards

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16. REFERENCES

16.1 Included References

1. Department of Energy (DOE) Prime Contract W-7405-ENG-48 (Contract 48), October 1, 1997.

2. DOE P 450.4, "Safety Management System Policy," dated October 15, 1996.

3. Memorandum to all Department and Contractor Employees, from Secretary Bill Richardson, "Safety-Accountability and Performance," March 3, 1999.

4. DOE G 450.4-1A, "Integrated Safety Management System Guide for use with Safety Management System Policies (DOE P 450.4, DOE P 450.5, and DOE P 450.6), dated May 27, 1999.

5. Letter from R. Promani (DOE/OAK) to D. K. Fisher (LLNL), "Contract No. W-7405-ENG-48, Clause 6.7, Contracting Officer Guidance on Integrated Safety Management System (ISMS) Description Document Development and Implementation," dated August 18, 1998.

6. DOE G 450.4-1, Integrated Safety Management Guide for use with DOE P 450.4, Safety Management System Policy, and DEAR Safety Management System Contract Clauses, dated November 26, 1997.

7. Letter from M. K. Hooper (DOE/OAK) to D. K. Fisher (LLNL), "Update to OAK Guidance for the LLNL Integrated Safety Management System (ISMS) and Oakland Operations Office Comments on the LLNL ISMS Description," dated March 5, 1999.

8. UCRL-AR-131934, Superblock V-Integrated Safety Management System Description, October 1998.

9. DOE/OAK and LLNL/DNT Authorization Agreement for the Tritium Facility – Building 331, January 28, 1999.

10. DOE/OAK and LLNL/DNT Authorization Agreement for the Plutonium Facility – Building 332, January 28, 1999.

11. DOE/OAK and LLNL/DNT Authorization Agreement for Building 334, January 28, 1999.

12. UCRL-AR-131934 Rev. 1, Superblock Integrated Safety Management System Description, May 1999.

13. Letter from J. M. Turner (DOE/OAK to C. B. Tarter (LLNL), "Approval of Superblock ISMS," dated September 30, 1999.

14. UCRL-AR-131934 Rev. 2, Superblock Integrated Safety Management System Description, October 1999.

15. EH2MGT/11-97/04SH, Integrated Safety Management Evaluation of Lawrence Livermore National Laboratory, November 1997.

16. EH2TEC/11-97/04SH, Integrated Safety Management Evaluation of Lawrence Livermore National Laboratory Field Report, November 1997.

17. DOE-STD-1027-92 (CH-1) Hazard Categorization and Accident Analysis Techniques for Compliance with DOE O 5480.23, Sections 2,3,4 and Attachment 1 (except for the requirement for Certificates of Compliance for Type B containers).

18. DNFSB/TECH-19, "Authorization Agreements for Defense Nuclear Facilities and Activities," April 1998.

19. UCRL-AR-120251-3, Environmental, Safety, and Health Management Plan (Fiscal Year 2001 – 2005) May 6, 1999.

20. DOE P 450.3, "Authorizing Use of the Necessary and Sufficient Process for Standards-Based Environment, Safety and Health Management," dated January 25, 1996.

21. DOE M 450.3-1, "The Department of Energy Closure Process for Necessary and Sufficient Sets of Standards," dated January 25, 1996.

22. Letter from M. K. Hooper (DOE/OAK) to R. W. Kuckuck (LLNL), "Expectations for Integrated Safety Management (ISM) Declaration of Readiness," dated May 10, 1999.

16.2 Supporting References

- DNFSB/TECH-16, "Integrated Safety Management," June 1997.

- Letter from D. K. Fisher (LLNL) to M. K. Hooper (DOE/OAK), on documentation for ISMS verification process, September 28, 1998.

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18. APPENDICES

A. Clause 6.7 - The ES&H DEAR Clause

This clause is taken from 48 CFR 970.5204-2 and is consistent with DOE Policy 450.4 Safety Management System Policy. This clause is the foundation of ISM.

CLAUSE 6.7 - DEAR 970.5204-78

Integration of Environment, Safety, and Health into Planning and Execution (June 1997)

a) For the purposes of this clause, safety encompasses environment, safety and health, including pollution prevention and waste minimization; and employees include subcontractor employees.

b) In performing work under this contract, the Contractor shall perform work safely, in a manner that ensures adequate protection for employees, the public, and the environment and shall be accountable for the safe performance of work. The contractor shall exercise a degree of care commensurate with the work and the associated hazards. The Contractor shall ensure that management of environment, safety, and health (ES&H) functions and activities becomes an integral but visible part of the Contractor's work planning and execution processes. The Contractor shall, in the performance of work, ensure that:

1) Line management is responsible for the protection of employees, the public, and the environment. Line management includes those Contractor and subcontractor employees managing or supervising employees performing work.

2) Clear and unambiguous lines of authority and responsibility for ES&H are established and maintained at all organizational levels.

3) Personnel possess the experience, knowledge, skills and abilities that are necessary to discharge their responsibilities.

4) Resources are effectively allocated to address ES&H, programmatic, and operational considerations. Protecting employees, the public, and the environment is a priority whenever activities are planned and performed.

5) Before work is performed, the associated hazards are evaluated and an agreed-upon set of ES&H standards and requirements are established which, if properly implemented, provide adequate assurance that the employees, the public, and the environment are protected from adverse consequences.

6) Administrative and engineering controls to prevent and mitigate hazards are tailored to the work being performed and associated hazards. Emphasis should be on designing the work and/or controls to reduce or eliminate the hazards and to prevent accidents and unplanned releases and exposures.

7) The conditions and requirements to be satisfied for operations to be initiated and conducted are established and agreed-upon by DOE and the Contractor. These agreed upon conditions and requirements are requirements of the contract and binding upon the Contractor. The extent of documentation and level of authority for agreement shall be tailored to the complexity and hazards associated with the work and shall be established in a Safety Management System.

c) The Contractor shall manage and perform work in accordance with a documented Safety Management System (System), that fulfills all conditions in paragraph (b) above at a minimum. Documentation of the System shall describe how the Contractor will:

1) Define the scope of work,

2) Identify and analyze hazards associated with the work,

3) Develop and implement hazard controls,

4) Perform work within controls; and

5) Provide feedback on adequacy of controls and continue to improve safety management.

d) The System shall describe how the Contractor will establish, document, and implement safety performance objectives, performance measures, and commitments in response to DOE program and budget execution guidance while maintaining the integrity of the System. The System shall also describe how the Contractor will measure system effectiveness.

e) The Contractor shall submit to the Contracting Officer documentation of its System for review and approval. The Contracting Officer will establish dates for submittal,

discussions, and revisions to the System. The Contracting Officer will provide guidance on the preparation, content, and review and approval of the System. On an annual basis, the Contractor shall review and update, for DOE approval, its internal safety performance objectives, performance measures, and commitments consistent with and in response to DOE's program and budget execution guidance and direction. Resources shall be identified and allocated to meet the safety objectives and performance commitments as well as to maintain the integrity of the entire System. Accordingly, the System shall be integrated with the Contractor's business processes for work planning, budgeting, authorization, execution, and change control.

f) The Contractor shall comply with, and assist DOE in complying with, all applicable laws, regulations, and DOE Directives. The Contractor shall cooperate with regulatory authorities having jurisdiction over ES&H matters under this contract.

g) The Contractor shall promptly evaluate and resolve any noncompliance with applicable ES&H requirements and the System. If the Contractor fails to provide resolution or if, at any time, the Contractor's acts or failure to act cause substantial harm or an imminent danger to the environment or health and safety of employees or the public, the Contracting Officer may issue an order stopping work in whole or in part. Any stop work order issued by a Contracting Officer under this clause (or issued by the Contractor to a subcontractor) shall be without prejudice to any other legal or contractual rights of the Government. In the event that the Contracting Officer issues a stop work order an order authorizing the resumption of the work may be issued at the discretion of the Contracting Officer. The Contractor shall not be entitled to an extension of time or additional fee or damages by reason of, or in connection with, any work stoppage ordered in accordance with this clause.

h) The Contractor is responsible for ensuring compliance with the ES&H requirements applicable to this contract at the facilities identified in Clause 6.1, Laboratory Facilities, regardless of the performer of the work. To the extent permitted by law, this paragraph is not intended to attribute any liability to the Contractor in the absence of a specific finding of fault on the part of the Contractor.

i) The Contractor shall include a clause substantially the same as this clause in subcontracts involving complex or hazardous work on-site at a DOE-owned or DOE -leased facility. Such subcontracts shall provide for the right to stop work under the conditions described in paragraph (g) above. Depending on the complexity and hazards associated with the work, the Contractor may require that the subcontractor submit a Safety Management System for Contractor's review and approval.

B. Clause 5.5 - The Compliance Requirements DEAR Clause

This clause is derived from 48 CFR 970.5204-78. This clause is the foundation of WSS.

CLAUSE 5.5 - DEAR 970.5204-78

Laws, Regulations, and DOE Directives
(June 1997) (Modified)

(a) In performing work under this contract, the Contractor shall comply with the requirements of applicable federal, state, and local laws and regulations, unless relief has been granted in writing by the appropriate regulatory agency.

(b) In performing work under this contract, the Contractor shall comply with the requirements of those DOE Directives, or parts thereof, identified in the List of Applicable Directives (List) referred to in Appendix G, DOE Directives. The Contracting Officer may, from time to time and at any time, revise the List by unilateral modification to the contract to add, modify, or delete specific requirements; provided, however, that no directive added to the List shall in any manner modify the rights and obligations of the Parties except as set forth elsewhere in this contract.

(c) Prior to revising the List, the Contracting Officer shall notify the Contractor, in writing, of DOE's intent to revise the List and provide the Contractor with the opportunity to:

(1) Assess the effect of the Contractor's compliance with the revised List on contract cost and funding, technical performance, and implementation schedule for directives on the List; and

(2) Identify any potential inconsistencies between the revised List and the other terms and conditions of the contract, including an alternative set of requirements incorporated by reference in accordance with paragraph (f) below.

(d) Within 30 days after receipt of the Contracting Officer's notice, the Contractor shall advise the Contracting Officer, in writing, of the potential impact of the Contractor's compliance with the revised List, including the matters identified in paragraph (c) above.

(e) Based on the information provided by the Contractor and any other information available, the Contracting Officer shall decide whether to revise the List, and so advise the Contractor not later that 30 days prior to the effective date of the revision of the List.

The Contractor and the Contracting Officer shall identify and, if appropriate, agree to any changes to other contract terms and conditions, including cost and schedule, associated with the revision of the List pursuant to Clause 5.6, Changes. No DOE directive shall be considered a requirement of this contract unless it has been included in the List in accordance with the procedures set out in this clause.

(f) Environmental, safety, and health (ES&H) requirements applicable to this contract may be determined by a DOE approved process to evaluate the work and the associated hazards and identify an appropriately tailored set of standards, practices, and controls, such as a tailoring process included in a DOE approved Safety Management System implemented under Clause 6.7, Integration of Environment, Safety, and Health into Work Planning and Execution. When such a process is used, the set of tailored ES&H requirements, as approved by DOE pursuant to the process, shall be incorporated into the List as contract requirements with full force and effect. These requirements shall supersede, in whole or in part, the contractual environmental, safety, and health requirements previously made applicable to the contract by the List.

(g) The Contractor shall be responsible for compliance with the requirements made applicable to this contract, for work performed at the Laboratory regardless of the performer of the work. Consequently, the Contractor shall be responsible for flowing down the necessary provisions to subcontracts at any tier to which the Contractor determines such requirements apply.

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19. ATTACHMENTS

I. Implementation Tasks, Schedules, and Milestones

The process and schedule that have been determined for the LLNL ISMS proceeded with the completion, LLNL approval, and delivery to DOE of the initial version of this Description on December 29, 1998. The confirmation of the WSS set was accomplished in March 1999 and their approval and inclusion in Contract 48 occurred on August 5, 1999. This provided ISM and WSS alignment for the ISMS Initial Verification in December 1999, where this Description, the Directorate Implementation Plans, and accompanying documentation were formally reviewed by DOE. The currently planned completion of ISMS implementation is April 2000 and the Final Verification is now planned to start in May 2000. With completion of the Final Verification there will be a complete utilization and continuance of the LLNL ISMS and the existing assessment process will provide continuing evaluation.

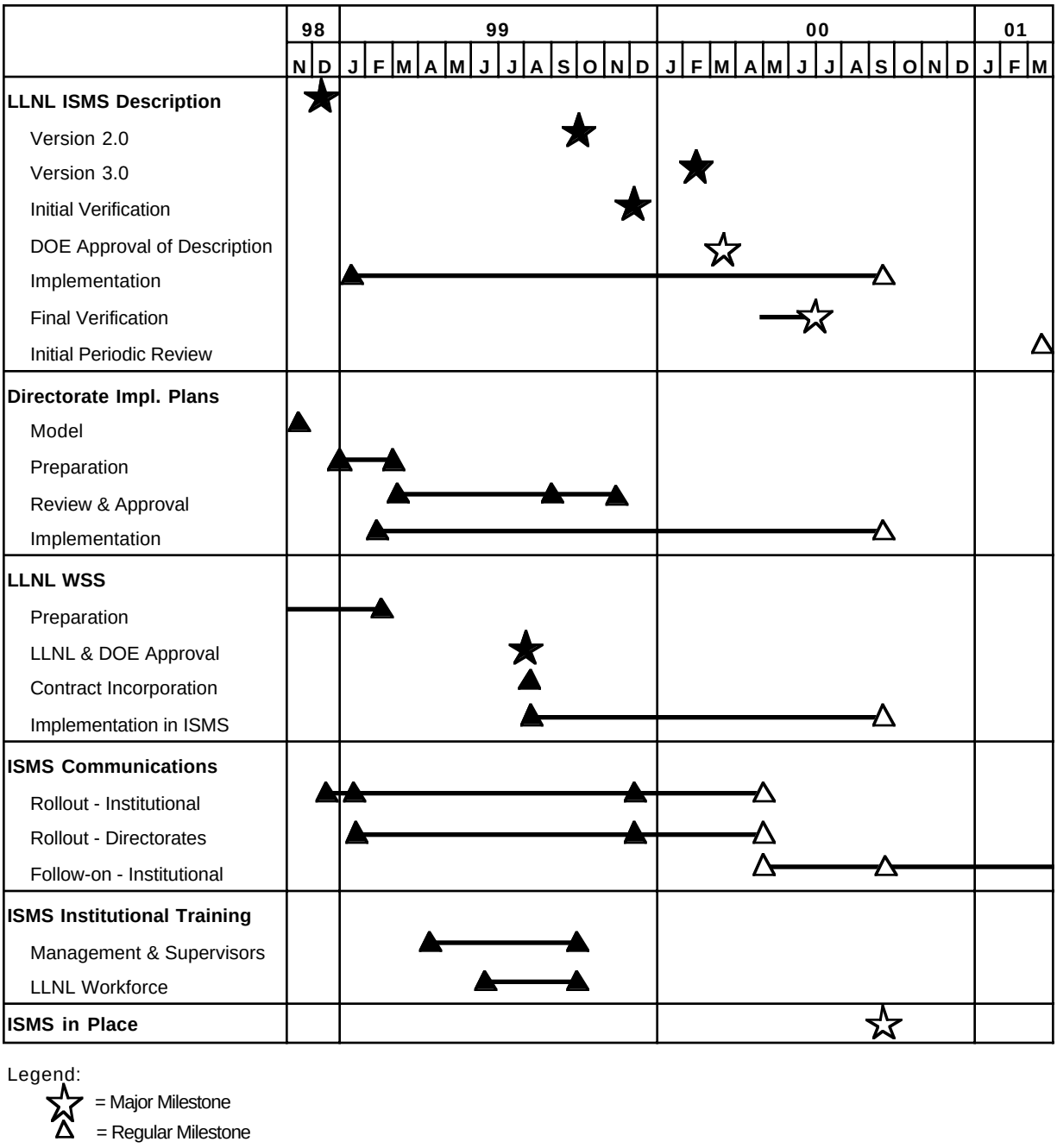

Figure 18.1: Summary Plan of the Implementation Tasks, Milestones, and Schedules.

II. Communications Program Plans

A. Introduction and Summary

The ISM communications program is important to the successful implementation and transition to an effective ISMS at LLNL. It naturally consists of short and long-term components with modifications continually occurring as schedules change, the planned actions are completed, and issues develop and are resolved.

Other communications opportunities will be derived from new activities, reviews, and other actions. The main point is to keep safety visible to employees as an important management issue, and to maintain management support and visibility for the effort.

B. ISM Communications Activities – Short Term

The major effort during the first half of 2000 will be to support completion of full implementation of ISM and to prepare employees at all levels for Final Verification. Communications topics will include, but not be limited to, the following:

- Integration Work Sheets – helping employees understand how to use them effectively.
- ES&H Manual – promoting the value of the on-line version.
- Facility Points of Contact – identifying and training appropriate people; making them known.
- Procurement – making sure requesters know how ISM affects contracts.
- Lessons Learned – expanding use.
- Core knowledge for verification – establishing what employees need to know and communicating expectations to them.

In addition to the above, a feedback program on how well implementation is progressing will be established by the end of the first quarter of 2000.

Important to the communications effort, is the reorganization and expansion of the ES&H home page: http://www.llnl.gov/es_and_h/. It will include numerous documents, among them IWSs, the ES&H Manual, and the ISMS Description. All will be linked. Other topics will include Lessons Learned and Work Smart Standards. A complete listing of Facility Points of Contact will also be available.

Finally, while implementation and verification proceed, the general topic of workplace safety will be promoted in numerous ways, as outlined below. Such communications are viewed as an important part of establishing an improved safety culture at LLNL.

C. ISM Communications Activities – Long Term

Planned activities include:

- Management visibility/involvement – Work the issues; make resolutions known.
- Supervisory safety communications – Develop and promote resources that improve safety communications between first-line supervisors and their employees. This activity will work in conjunction with the expanded ES&H home page.
- Periodic ES&H campaigns –Many programs are planned for 2000 covering topics such as: Office Safety, Repetitive Motion Injuries, Safe Science, and Think Ergonomics, etc.
- *Newsline* – Work with editor to maintain high visibility of safety topics and issues. Continue the program to publish illustrated strips on Lessons Learned. (Begun in January 2000).
- National Safety Month, 2000 – Expand 1999 effort.
- Employee involvement – Look for opportunities to involve employees in safety communications and activities.
- Lessons Learned – Extend program to gather Lessons Learned and communicate them to employees.